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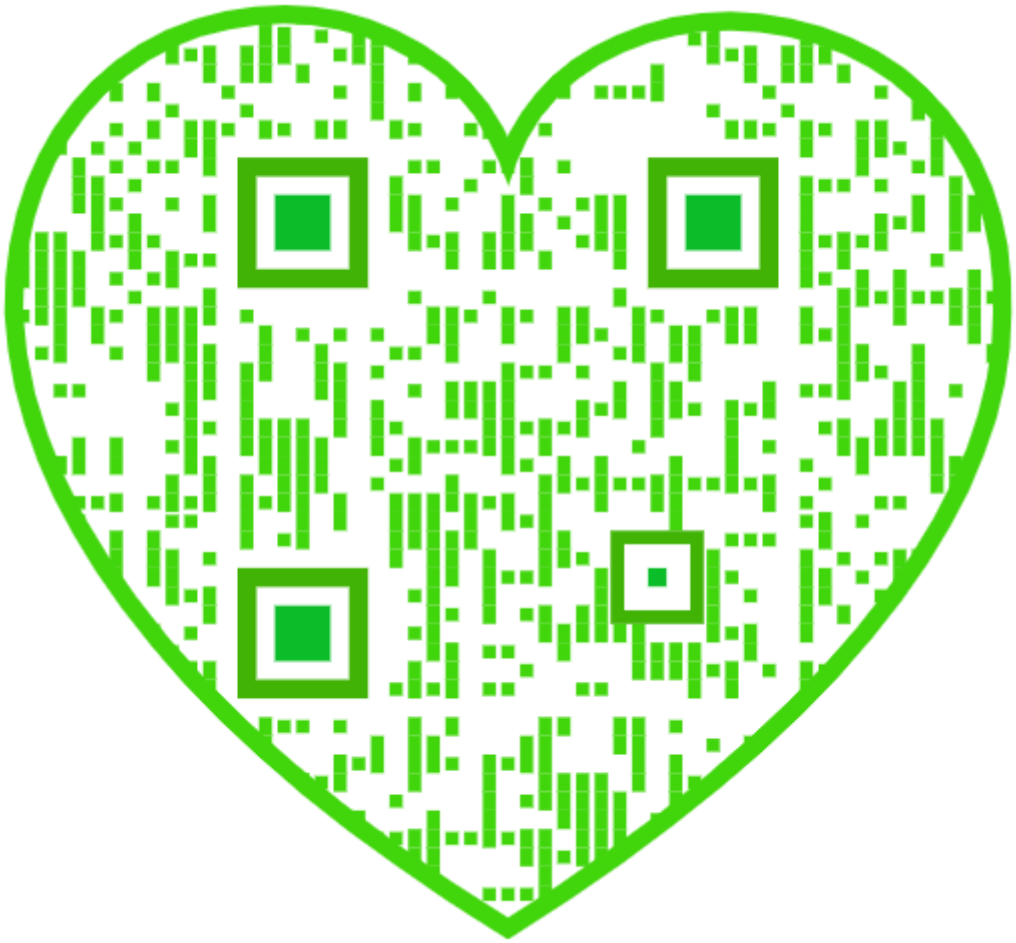

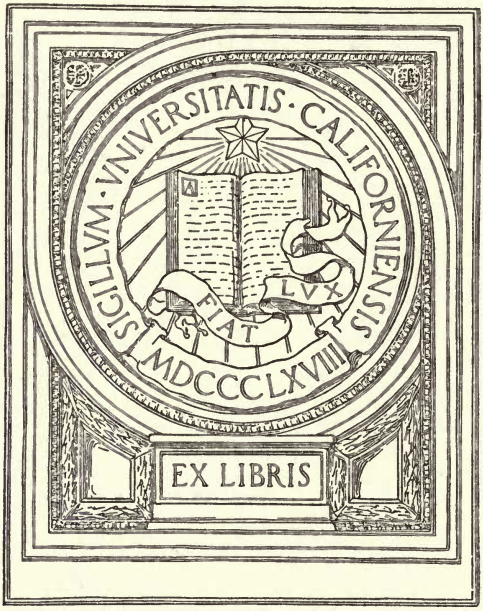
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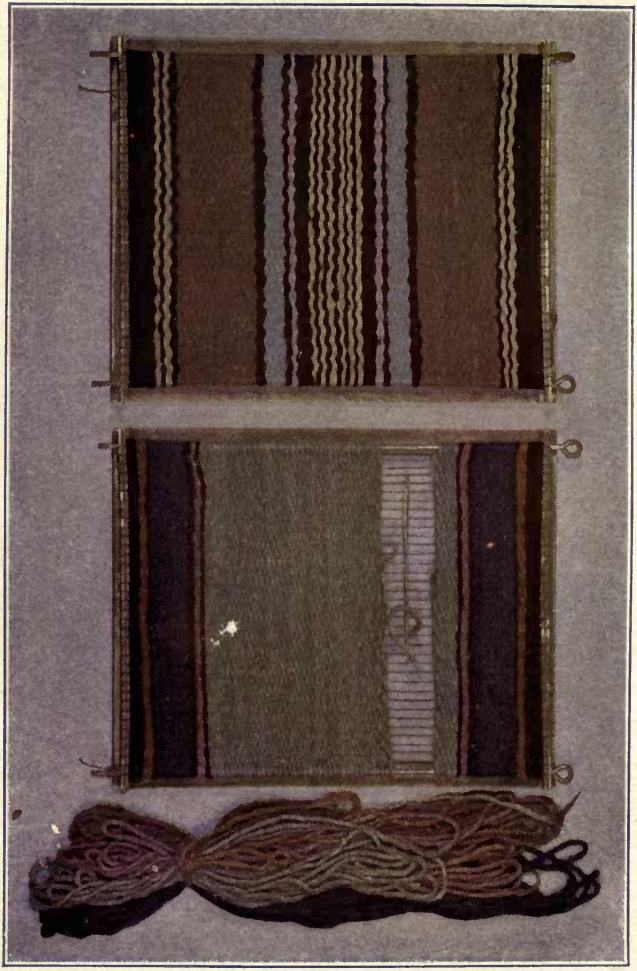
HAND-LOOM
WEAVING
A MANUAL



From Applied Arts Drawings Books by Wilhelmina Seegmiller.
Courtesy of Atkinson, Mentzer & Co.

Rugs showing harmony of color in weaving

HAND-LOOM WEAVING

A Manual for School and Home

By

MATTIE PHIPPS TODD

Horace Mann School, Minneapolis, Minn.

With an Introduction by

ALICE W. COOLEY

Formerly Supervisor of Primary Schools, Minneapolis, Minn.

Illustrated

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Revised, 1914

UNIV. OF
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The highest aim of art is to make some useful thing beautiful.

Kenyon Cox.

An Introduction

FOR many years we, the teachers of the United States assembled in village, city, State, and national conventions, have recited our creed and chanted it in all keys.

Our creed

We believe that man is a trinity, three in one — head, heart, and hand, one soul made manifest; we believe that this union is vital and indissoluble, since "what God hath joined together" may not be rent asunder; we believe that this three-fold man, being "put to school" on earth to grow, may devise and bring to successful issue no scheme of education that is out of harmony with the plan of the Creator.

Congratulating ourselves upon our ready and distinct utterance of this lofty thought, we have calmly returned to our man-devised book-schools for the acquisition of knowledge, in order to forward some plan for the accumulation of more knowledge.

Deeds, not words, are now necessary

But "wisdom lingered"! Here and there voices were raised that would not be silenced: "You sang your beautiful song; what are you going to *do* about it?" In the words of John

Stuart Mill, "It is now time to assert in deeds, since the power of words is well-nigh exhausted."

Investigators, studying this union of head and hand from the physiological side, hurled truths at us that startled us from our lethargy.

Physiological truths

Every stimulus poured into nerve cells through the avenues of the senses tends to pass out in motor action, which causes muscular movement. In every idea are vitally united the impression and the tendency to expression in action. The nervous system consists of the fibres which carry currents inward, the organs of central redirection, and the fibres which carry them outward—sensation, direction, action. Since control means mental direction of this involuntary discharge of energy (directed muscular movement), control of the muscles means development of will as well as of skill. To prevent or cut off the natural outflow of nervous energy results in fatigue and diseased nerves. Unrestrained and uncontrolled expenditure of nervous energy results in lawlessness and weakened will.

Men of science said: "These are facts about man. What account have you made of them in your elaborate system for educating him?"

Students of sociological and economic problems called out to us as the teachers of men:

These great problems concerning the relation of labor and capital (the brotherhood of man) will never be solved until there is greater respect for labor; greater appreciation of the value of the products of labor; until there is more joy to the worker in his labor, which should be the expression through his hand, of the thought of his head, and the feeling of his heart; until labor is seen in its true light, as service; until the man with money as well as the man without learns through experience to respect and appreciate labor and its products. "We *absorb* only so much as we can interpret in terms of our own active experience."

Labor must be respected

What contributions are our schools making to the bettering of social and industrial conditions?

Philosopher and poet—thinker and seer—send their message:

> "That life is wisest spent
> Where the strong, working hand
> Makes strong the working brain."

To create, to make something, is the instinct of divinity in humanity, the power that crowns man as divine.

"It is his impulse to create
Should gladden thee."

The will to do

The practical business man thunders his protest at us against the inefficiency of the man with only the knowledge-stored brain. He says. We must have men that can *will to do*, and then *do* something, not merely men that can think of things "'twere good to do." Our public schools must train men and women to go out and take their place with the workers of the world, to do something well and effectively.

Systematic hand-training the work of to-day

At last we are awake, and throughout the country we are trying to heed these calls, and to revive our own weakened thought by action, singing our creed in deeds. Upon the foundations laid by Friedrich Froebel and his students in the kindergarten, we are trying to build up a course in systematic hand-training, through the primary, to intermediate and grammar grades, and thence to manual training in the high schools. *What* to do and *how* to do it has now become the practical problem of the day. Everywhere the wide-awake primary teacher is sharing her thought and experience with her co-workers.

For little children, the *what* must utilize material suitable for little fingers, and tools

must be large. The finished product should belong to the maker, or be made by him as a service rendered to others; the result should also be worthy of keeping or giving, from the view-points of both beauty and utility.

Another important factor is the adaptation to present public-schoolroom conditions, and to present public-school treasury conditions.

Weaving the best hand work for primary schools

More thoughtful study has led to the abandonment of the old-time sewing and fine handwork in kindergarten and primary school. In its place we find the weaving of useful and beautiful articles, out of various available materials, and with simple, primitive tools—allowing always for much and varied use of the great tools, the fingers.

It is interesting to note that teachers in all parts of the country, working independently of each other, have come to practically the same conclusions, viz., that under present conditions, *weaving* seems the best basis for a systematic course in industrial work that shall train head and heart as well as hand. It is also of great interest to remember that the signboards along the pathway of race development, by means of work, exchange of labor and its products, all point to this idea as the entering gateway.

Weaving is the first industry of all primitive peoples.

Being practically agreed as to *what* shall be the first industrial work in the primary school, the next great question is the *how*. With large numbers of little children in her own schoolroom, the author of this manual has long sought a satisfactory answer. Believing that the results of her study and experience will be helpful to others in suggesting possibilities, and in stimulating thought, as well as in practical teaching and time-saving, she sends forth this little book with the earnest hope that it may in these ways be of real service.

This manual the result of study and experience

ALICE W. COOLEY.

August 1, 1902.

NOTE TO EDITION OF 1914

When "Hand-Loom Weaving" was written in 1902, the work was in its pioneer stage. Eleven years of experience have led not only into new paths, but into better ways of treading the old ones. In this edition will be found many new suggestions in presenting weaving to the little industrial workers of the world, whether in school or at home.

M. P. T.

January, 1914.

HAND-LOOM WEAVING

Chapter One

PRIMITIVE AND MODERN LOOMS

WEAVING, the oldest of the industrial arts, dates back so far that no one can say when or where it had its beginning. We read in Genesis iii, 21, that when Adam was driven from the Garden of Eden he wore a coat of skin; but, not long after, according to Professor Hurwitz, the descendants of Adam wore an upper garment called the simla, which consisted of a piece of cloth about six yards long and two or three wide, greatly resembling a blanket (*Ashenhurst*). This might have been woven from vegetable fibres, perhaps from wool, but in what manner we do not know. The warp and woof of linen and woolen garments is mentioned in Leviticus xiii, 47, 48.

History of weaving

Spinning and weaving have been practised by the Chinese, Hindoos, and Egyptians for thousands of years and carried by them to great proficiency. The Israelites were probably familiar with the art of weaving

before their sojourn in Egypt, but it was there that they attained the skill which enabled them to execute the hangings in the Tabernacle. Joseph's "coat of many colors" is a proof that dyeing existed at a very early period, and the eloquent writings of Ezekiel tell us of the beautiful colored cloths of Tyre and Damascus.

Dyeing

Migration of weaving

From the ancient world the art of weaving passed through Europe and became known in England after the Roman conquest. No doubt primitive weaving with vegetable fibres, and perhaps with wool, was known in a very crude way before that time. How the art developed, and how improvement followed improvement, makes very interesting reading for the student of textile fabrics.

Weaving as the first industrial art

We know that weaving is the first industrial art practised by primitive peoples, from the fact that it is found among the savages of Central Africa (*Park*) and the islands of the sea. "Clavigero, in his history of Mexico, shows that on the conquest of that country, weaving was found to be practised by the natives." (*Ashenhurst.*)

Egyptian loom

The Egyptians are supposed to have been inventors of the loom. There were two kinds in use, one horizontal and the other

perpendicular. Instead of a shuttle they used a stick with a hook at one end, which was used also as a batten. Herodotus says that it was the practice of the Egyptians to push the woof downwards, and this method is pictured in many paintings; but one representation found at Thebes shows a man pushing it upwards. The former method is, I believe, the one generally used by all nations, and it certainly seems the easier way. Martin's description of a Hindoo loom in his "Circle of the Mechanical Arts" is interesting: "The loom consists merely of two bamboo rollers, one for the warp and the other for the web, and a pair of gears. The shuttle performs the double office of shuttle and batten, and for this purpose is made like a huge netting needle, and of a length somewhat exceeding the breadth of the cloth. This apparatus the weaver carries to a tree, under which he digs a hole large enough to contain his legs and the lower part of the gear. He then stretches his warp by fastening his bamboo rollers, at a due distance from each other on the turf, by wooden pins. The balance of the gear he fastens to some convenient branch of the tree over his head. Two loops underneath the gear, in which he inserts his great toes, serve instead

Method of pushing the woof

Hindoo loom

of treadles, and his long shuttle, which also performs the office of batten, draws the weft through the warp, and afterwards strikes it up close to the web."

Crude implements used by primitive peoples

Ashenhurst says: "It is very evident that the implements used, not only by the early Egyptians, but by other contemporaneous nations, and even by the Hindoos at the present time, were of the rudest possible character, and nothing but the most exemplary patience, dexterity, and great delicacy of hand, acquired by long traditionary habit, can account for the extraordinary beauty and fineness of their textile productions." This exemplary patience, dexterity, and great delicacy of hand is exactly what we claim that weaving develops in our children to-day.

Patience and dexterity necessary

Primitive loom in the public schools

The primitive loom, as it is made for use in the public schools, is familiar to almost every teacher. It consists of a wooden frame, in the two ends of which are fastened brads at intervals of half an inch. The warp is strung around these brads. There is no variation either in the size of the rug or in the width of the warp to afford opportunity for different materials. This is a decided objection, as a new frame has to be made every time a change is desired. The first difficulty encountered is the drawing in of the sides of

Its disadvantages

the rug, which is almost impossible to avoid, even with the utmost care. Photographs of work in the leading educational magazines, as well as samples of teachers' work, all show the same defect. The Indians obviate this difficulty by twisting two stout cords in the edge of the woof during the process of weaving. (See illustration on page 135.) In one school, where the work in this respect was fairly well done, the teacher was asked how she accomplished the result. Her reply was, "Oh, I make them pull it out every time it draws." Poor, patient little fingers! One can imagine the thoughts which were woven into that imperfect rug by the discouraged little worker. Another disadvantage of the primitive loom is that the child must bend over it while weaving, and if, by chance, he turns it over to examine the other side of the work, the brads are apt to leave an unsightly impression on the desk.

Success in doing

One of Froebel's fundamental principles is that a child should never be *allowed* to fail —that his work should be so adapted that he will succeed *every time*, and that he should be led step by step as his power grows, to something more difficult.

"One thing is forever good,
That one thing is success."

We have all experienced the joy of success in one way and another. Let us help the children to have the same experience.

Idea of the "new education"

The idea of the "new education" is that the child should work out his own salvation —that having wrestled with the difficulties involved in weaving on the primitive loom, he should proceed not only to invent but to construct a newer and more improved loom.

Small classes

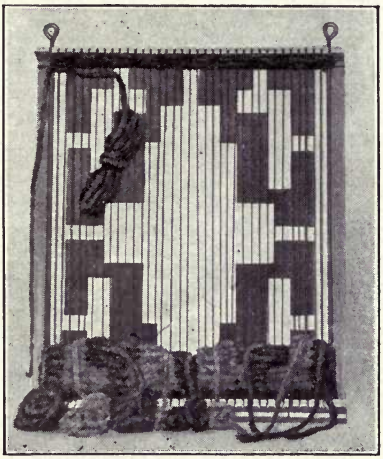
In model schools, where the classes are limited to ten, or sometimes fewer children, with one teacher and several assistants, this idea, if carried out, is ideal, and perhaps practical. But what shall be said of the public-school teacher who has fifty children and no assistants; or what of the teacher with two sessions of fifty pupils each, which is often the case in our crowded schools? It was the effort to solve a problem of this kind that led to the invention of the Todd adjustable hand loom.

Public school conditions

Description of the Todd loom

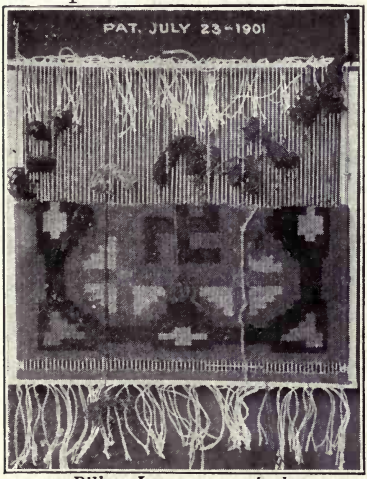
Practical experience in the use of these looms for several years has suggested some changes, and they are now made of hard-wood throughout from selected and thoroughly dried birch. The frame is made with double-lock corners, nailed and glued, and the notched end bars of reinforced wood have teeth sufficiently long to retain the warp strings. The perforations for rods in

these bars are now made of the same size, and the rods can be inserted from either end.



The Todd Loom No. 1 9 x 12 inches

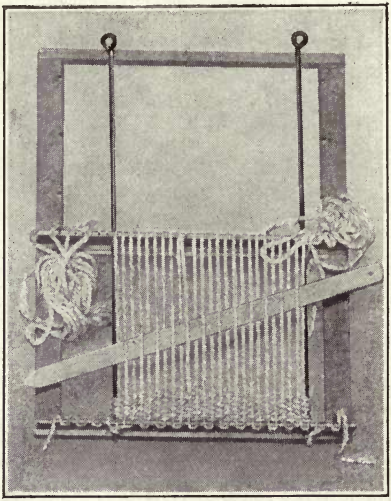
The Todd Loom No. 1 is adjustable in width only, by moving the rods to different perforations. Size, 9 x 12 inches; two rods and no needle.



Pillow Loom, 20 x 20 inches

Loom No. 1 is also made in size 20 x 20 inches for pillow tops, pieced rugs, with continuous warp for strips of any length.

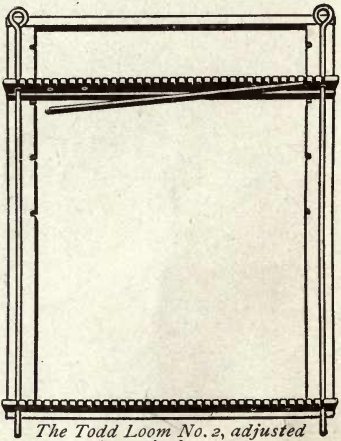
The Todd



The Todd Loom No. 2 adjusted for 6-inch square

Loom No. 2 is adjustable in length and width. To adjust for length, press the lock bar down. Move the head to any desired notch and relock with bar. Size, 9 x 12 inches; two rods, and long wooden needle.

The Todd Perfection Loom is adjustable in length and width and has hammock attachments. These curved ends allow for the requisite dip in hammocks without interfering with other work. Size, 9 x 12 inches; two rods,

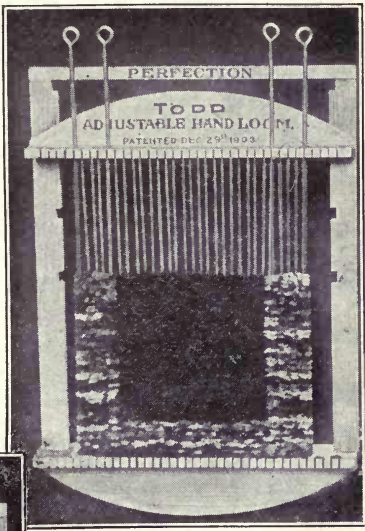


The Todd Loom No. 2, adjusted for 10-inch square

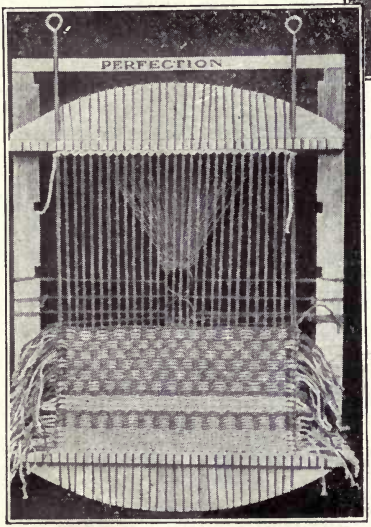
and long wooden needle.

The Todd Hammock Loom Board is intended for hammocks only. Size, 7 x 10 inches. (See illustration on page 95.)

While a great deal of the work is intended for the schoolroom, many suggestions are given for home weaving, in making various articles for birthday and holiday gifts.



The Todd Perfection Loom with rug 8 x 10 inches



The Todd Perfection Loom with hammock, 8 x 10 inches

Chapter Two

A CHAT ON WEAVING

Weaving defined

WEAVING is the art of interlacing threads, yarns, filaments, or strips of different material, so as to form a cloth or fabric. It is an ideal occupation, not only for little children, but for older ones as well, affording admirable opportunities for the development of head, hand, and heart. It

Weaving trains both hands

trains both hands in deftness and proves a delight to the left-handed child, who for the joy of using his left hand again, will plod patiently across with the right. The fat little hands soon learn to grasp the large needle, and the nerves and muscles of both hand and arm are strengthened by daily use. Both

The threefold development

hand and eye are trained in accuracy, and the training in patience, perseverance, industry, economy in the use of materials, perception, concentration, dexterity, and self-reliance cannot be overestimated. The heart, too, has its part in the joy of giving to others, for the children are encouraged to make little gifts for the home. A consciousness of power comes, also, with experience; and a

sense of self-respect arises when the child realizes that he is of some use in the world.

Lois Bates, in her "Kindergarten Guide," says that "in the manufacturing districts of England great numbers of the children who pass through the elementary schools are employed in mills where weaving is carried on, or enter textile schools to learn designing in cloth. If this occupation of mat-weaving could be continued until the children had a thorough knowledge of its principles, how much intelligence might be brought to bear on the actual weaving and how much more pleasure might the worker draw from labor that is often looked upon as so much mechanical drudgery!" The keynote for this is the *thorough knowledge* which is necessary, whether or not our children are to enter textile schools. Whatever they do, let them do it thoroughly. It should always be a question of quality, not quantity.

Knowledge of principles necessary

For this reason I have taken up, quite at length, the subject of first steps in weaving, believing that children should be kept at simple weaving until they understand the principles thoroughly. The felt and paper mats prepare the way for loom-weaving; the free paper weaving, and the slats and splints for basketry. A few suggestions on the use

Simple weaving the first essential

Mats as a preparation for loom weaving

of the slats and splints have been given for two reasons: First, for the training which they afford in dexterity and great delicacy of touch, to say nothing of *exemplary patience;* and second, because the preliminary training for basketry should be given in the lower primary grades. The time necessary to train clumsy fingers can hardly be taken from the regular work in grades where basketry is a prescribed course.

Slat interlacing and splint work lead to basketry

"Skill in the fundamental methods of weaving is essential even as the fingers must be trained in music before the soul of the musician can find its expression. Make good baskets first, simple in shape, strong in texture, suited to the purpose for which they are intended; unconsciously they will grow beautiful. The most intricate basket will fail in its purpose if the joinings are careless or flaws in workmanship permitted. If originality is within the weaver, it will find its expression, once the principles of weaving are second nature." (*C. S. Coles.*) This is also true of rug and mat weaving, for the aim of all training should be to bring out the best there is in a child.

"Devotedness to duty"

"The longer on this earth we live
And weigh the various qualities of men,
The more we feel the high, stern-featured beauty
Of plain devotedness to duty;

Steadfast and still, nor paid with mortal praise,
But finding amplest recompense
For life's ungarlanded expense
In work done squarely and unwasted days."
—*James Russell Lowell.*

The "Kraus-Boelte Guide" has some good suggestions with regard to the value of paper mat weaving, in number training, and for following certain formulæ which will lead ultimately to invention. Mme. Kraus-Boelte says: "Weaving leads to independent effort and offers the greatest scope for future technical work, for it lays the foundation for designing. Even though it may not fan into flame a latent spark of genius, this means of occupation at least tends to show the value of honest labor." The child not only recognizes the value in honest labor, but his sympathy with all labor is aroused through his own efforts and through the stories told of weavers in all lands. He realizes, also, although in a limited way, the interdependence of the whole world. If the sun did not shine, and the rain fall, there would be no grass. If there were no grass, what would the sheep do? If the sheep did not give any wool, what would the weaver do? If the weaver could not weave, what would we do for clothes? Little children are always delighted to go back to the

Weaving the foundation for designing

Honest work begets sympathy with labor

Interdependence in life

beginning of things. Oh, the joy of looking back on one's school days! As Friedrich Richter has truly said, "Recollection is the only paradise from which no man can be driven."

Some difficulties

One important thought in this whole subject is that the work should be so arranged as not to add any additional burden to the already crowded life of the teacher. It is a lamentable fact that we have overcrowded rooms, and only one pair of hands to do all that has to be done. Perhaps a bit of the author's own experience will be of some assistance. After looking the subject squarely in the face and considering it on all sides, the writer came to the conclusion that it would be an impossibility to do all the work alone. So some helpers were called from the pupils of the higher grades, and the request met such a hearty response that it was wondered why it had not been tried before. As it is now arranged the older girls come in before school and at recess. They wind worsted, correct any knitting that may be wrong, start new spools, string looms, cut material for rugs, water plants, keep the closets where the materials are stored in order, and do many other things which relieve in a great measure the burden

A bit of experience

One solution

of detail. When it is possible, the teacher should choose girls who have a sister or brother in the room, because their interest is stronger and more lasting. Of course, some training is necessary, but the result compensates for the trouble. Sometimes the work in other grades can be so planned that the children can cut paper mats and strips for use in the first grade. The beautiful community feeling begun in the kindergarten can thus be continued in the public school. The time will come when boys and girls in the higher grades will design patterns for the younger children to weave.

Community feeling continued

Take plenty of time in the first part of the year to teach the children to work well. "Time is nothing when *power* is growing." There are some children who learn faster than others and they are always delighted to go about the room and help the slower ones. It will sometimes be found that they know just how to explain a difficult point — perhaps because they have just conquered it themselves.

Nature knows no hurry

No work has been specified as suited to any particular grade. It should depend entirely upon the children. While, for convenience, courses in industrial training are planned, advising certain lines of work which experience has proved the best for

first, second, or third grade, there are in every school, certain children who have more manual than mental ability. These are left behind as the more favored ones are promoted, and because a certain course has been recommended for that particular grade, they must, perforce, do it all over again. Instead of bringing out the best in these less fortunate ones, and developing and strengthening their minds through the hand by offering something not only new and interesting, but which presents new difficulties to conquer, we stunt their growth by giving them the same baby work term after term. It is time that earnest teachers considered this important question. Let us give up training the *mass* and begin to train the *individual*. Through our interest in them they may find their life work. If a child in the first grade is prepared to do any industrial work of a higher grade, no matter how dull he may otherwise be, by all means let him do it. It is his way of expressing what lies within him. Not only will his hand and mind be trained thereby, but his heart will be filled with the joy that always comes through achievement.

A child's work should be suited to his capacity, without regard to grade

Train the individual

Hand training has been found to be of great value in all other work. The children

Value of hand training

are brighter, and seem better able to grasp an idea. The slow children are also stimulated, and in doing the simple work well are preparing for that which is more difficult. Impression and expression should go hand in hand. We know nothing of "the bad boy," now that we have found something for his restless fingers to do. "The habit of methodical work is the basis of all ethics." In teaching children to do their best, we are training citizens. Some one has facetiously remarked that, "In the making of a good citizen it is necessary to catch your citizen early." We cannot get hold of the anarchists, but we can get hold of their children, and in the training of them to work lies their salvation. Formation is better than reformation.

If you would develop morality in a child, train him to work

Making citizens

Formation, not reformation

Verily, there is nothing new under the sun. We hie ourselves to the summer schools, and return laden with new ideas — when lo! it dawns upon us that all we have done during the hot days has been to make a new application of what Froebel taught the world before we were born. So in this introduction, an old story has been retold, but I hope that it will come with a new meaning to my fellow teachers.

New applications for old teachings

Chapter Three

FIRST STEPS IN WEAVING

THE principles of weaving are very easily learned with felt mats and slats. One-half a yard of felt two yards wide will make thirty-six mats six inches square. These are very durable, and can be used year after year, if protected from moths during the summer. Some people prefer leather, oil-cloth, or holland mats, but these materials are more expensive, and are not so pleasant to work with as the soft wool. The slats, which should be at least one-half an inch wide, can be obtained at any kindergarten supply store. Buy the uncolored slats and dye them yourself. Dark green mats, woven with deep red slats, are pretty. The slats are easier to handle if they are soaked and cut the required length before dyeing. When the six-inch mats are cut, allow a three-quarter-inch margin on all sides. Measure the mat for one-half-inch strips, of which there will be nine, and mark by snapping a chalked string upon the mat. Double it with chalked lines outside and commence to cut from the

Felt mats and slats

center; then open and finish cutting to the margin. It would be better for very little children if the strips and slats could be one inch wide. In this case the mats would, of course, be larger, and it might be necessary to have the slats made to order. The slats should be kept in little bundles containing the required number, and secured by rubber bands. If one could have plenty of time and material it would be a good plan to have several sets of mats of different sizes, so that the children would not always be confined to one number and its combinations in a certain set of patterns — in this case, nine — but have the pleasure which comes from variety. Demonstration cards and diagrams for weaving can be obtained at the kindergarten and school-supply stores. An illustration of an excellent demonstration frame can be seen in the "Kindergarten Guide," by Lois Bates. Sample mats can be woven by the older children from the designs in any of the "Guides," and given to the smaller children to copy.

Demonstration cards and diagrams

When the purpose of these practice mats is understood there can be no objection to them on the ground that the work is destroyed by pulling out the slats each time. It is not an unusual thing to see in schools,

Purpose of practice mats

and even in kindergartens, faithful and conscientious teachers remaining after hours to pull out the slats, on the principle, perhaps, that what the children do not see will not affect their development, and the innocent little bundles are given out again on the morrow, only to undergo the same experience at night. One wonders sometimes if this is possibly within the definition of deception. "We mount to the summit, round by round," and when the children understand that in doing the work with the slats well, they are only learning *how*, and that each successful attempt brings the delightful day nearer when they may have a loom to work upon, they are perfectly satisfied.

Do not deceive the child

When the children have learned to weave the small mats, further practice can be had by weaving long slats into a warp of cord on the loom. It is better to conquer the mystery of "over and under" in this way than to undo the work and wear out the material after making a mistake.

Long slat weaving

Many teachers prefer to make the practice mats of paper because they are cheaper. Mats of construction paper in desirable colors and sizes can be obtained at the school supply houses. In many schools children in grades above the entering room prepare

Paper mats

their own mats by measuring with tablets or rulers and then drawing and cutting on the lines. When they have learned to do them well, let each child make one for the entering room. Nothing so strengthens the community feeling in a school as encouraging the older pupils to help the younger.

The Bogus Paper Weaving Mat[1] is already ruled and children even in the first grade do their own cutting in preparation for weaving. This is preferable to plain paper as little children do not often make a success in the use of the ruler. Opportunity is given for an infinite variety of design, as the mats and strips are planned for different widths of warp and woof.

Mat-weaving in the kinder-garten

The mat-weaving, as it is done in the kindergarten, is very beautiful and fascinating work. The mats can be obtained in any size and any width of strips at the supply stores. The weaving is done with a long steel needle which has a spring at one end to hold the strip. After preliminary work with the felt mats and slats the children find themselves able to weave quite independently, particularly if demonstration cards or sample mats are placed before the class. An infinite variety of patterns, which later will be useful

[1] Patented Aug. 18, 1903, by Wilhelmina Seegmiller.

in wool-weaving, can be found in the "Kindergarten Guides." In weaving patterns having a center, it is better to weave two strips at once, pushing one to the top and one to the bottom of the mat. The old numbers of the Godey and Peterson magazines have patterns for Berlin wool and bead work which can be used for the paper mats with good effect. Mrs. Kate Douglas Wiggin (Mrs. Riggs) has some good suggestions for invention in weaving, in her "Republic of Childhood" (Occupations). The value of weaving in number work is also admirably set forth in this book.

Gifts

At Christmas time many charming little gifts can be made of these mats. Sachet cases made of a six or eight inch square, with four corners folded to the center, are attractive. Inclose with a square of wadding a pinch of heliotrope or white-rose perfume powder, and fasten the corners together with a scrap picture of old Santa Claus.

Slat work is useful in learning the fundamental principles of weaving, although it is more closely related to basket than to rug weaving. It is an excellent preparation for free-paper weaving, and for basket work.

In interlacing slats the mystery of "over and under" is solved and the dependence of

Interlacing slats

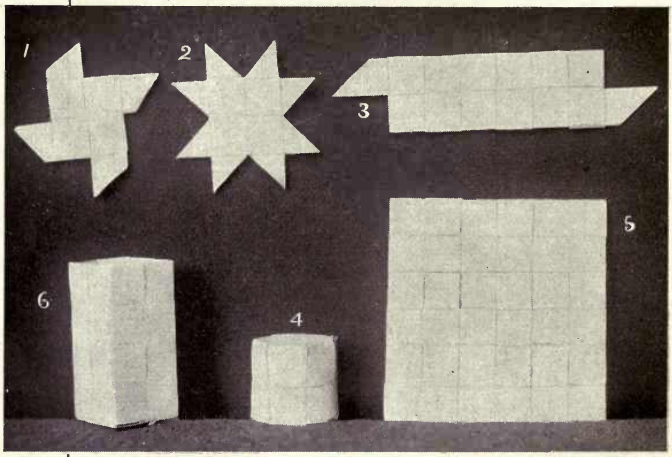
one slat upon another in making a perfect whole is forcibly shown, particularly when the form falls to pieces in the attempt to lift it from the table. Edward Wiebe says in his "Paradise of Childhood": "It was the *one* slat which, owing to its dereliction in performing its duty, destroyed the figure and prevented all the other slats from performing theirs." One such experience teaches more than a thousand precepts. The geometrical forms learned in the sense-training lessons can be reproduced with the slats and will thus be impressed upon the mind during the period of busy work at the desk. A series of beautiful designs is published by E. Steiger, New York. Many designs may be grouped for decoration, and single symmetrical figures can be mounted upon heavy paper.

Free-paper weaving

Free-paper weaving requires skill of hand and much patience before the child can achieve a successful result. Perhaps a few words regarding it, and information about a simple sequence of paper patterns, will not be out of place, since so many are to-day taking it up. Strips of manilla or construction paper in a variety of colors, forty inches long and one inch wide, are used. These are cut into strips eight inches, sixteen inches, twenty inches, and twenty-four inches in

Sequence

length. For the first pattern of the sequence take four strips eight inches long and double each one. Hold two of them side by side in the left hand, so that the open ends of the outer strip are at the top while those of the other are at the bottom. With the right hand inclose the first strip in the left hand with one of the remaining double strips and pass the ends of the latter between the two



Sequence in paper weaving

ends of the second strip. It helps the children to say "Around the open and through the closed" while they are weaving. This refers to the position of the strips in the hand, that is, open or closed at the *top*. Then hold the work in the right hand and proceed

in the same way with the left hand. When both strips are in, draw them tight and they will be firmly woven. The ends can be cut in any way desired. These little forms can be used for bookmarks. They are very attractive when made in two tones of one color.

The second pattern of the sequence is made with sixteen-inch strips. The first part is woven like the bookmark. Four double strips now project from the square. Begin at the bottom and fold back the *upper* one of each of these double strips. As you do this you will find that you are weaving another square on top of the first one. To secure the last strip pass it under the square next to it and pull it through. You will now have eight single strips, two on each side. To form these into points for a star proceed as follows: Begin with the right-hand strip at the top and number all the strips from one to eight. Fold number one back toward the right, making at the fold a right-angled triangle. Fold the strip down again towards you, making another triangle which is folded back to the left on the first one. Slip the end of the strip under the square next to it and cut it off. Proceed in the same way with three, five, and seven. Then turn the form over and fold the strips two, four, six, and

Sequence weaving

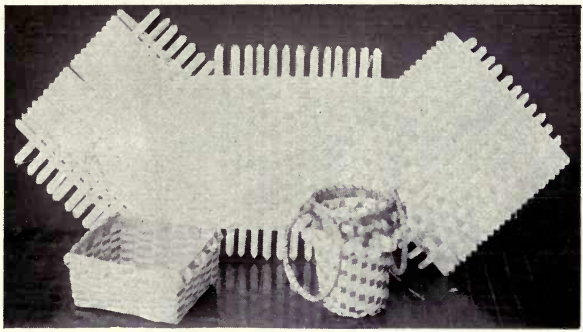
eight in the same way, cutting off the strips when finished. Many of these stars can be joined to make mats, baskets, picture frames, etc. They are pretty when made of gilt or colored paper for Christmas decorations.

Pattern number three, a bookmark, is made like the first, except that eight strips of sixteen-inch length are used and the strips woven at right and left are finished as directed for the mat. Number four is another form like this, with the long ends back and front slipped through squares to form a napkin ring. Number five is a six-inch mat made of twelve twenty-inch strips. Weave six double strips left and right into two strips and then add four to make the square. To finish the edge cut off the *under* one of each double strip, fold the upper one over it and then slip it under the square which comes next, cutting it off even. Strips of felt can be woven in this way for table mats or holders.

Sequence weaving

The sixth pattern is a pencil holder or a basket, as you may wish. It may be round or square on the bottom—in the latter case the sides are creased to form a square prism. Double twelve twenty-four-inch strips, weave eight right and left into four; finish one long edge for the top of the basket as you

did the edge for the mat. Bend in the form of a ring and slip the ends as you did for the napkin ring, cutting them off. To make the bottom, crease all the projecting ends in and weave together as you did the second part of number two, only double, and fasten the strips on the *outside* of the basket. This makes a good waste basket for the doll



Examples of splint work

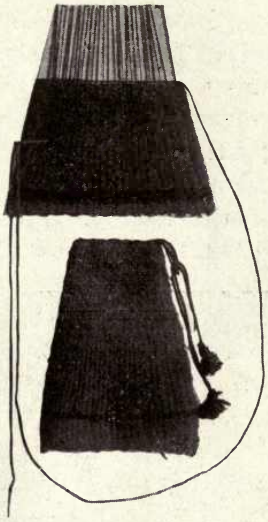
house. With a cover it would make a fine hamper for Miss Dolly's clothes.

Weaving with splints

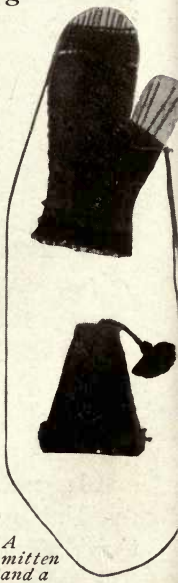
This free weaving leads directly to weaving with splints. These are much thinner than slats and can be obtained at the kindergarten supply stores. Many beautiful things can be made with splints. They are easily dyed at home and many pleasing combinations of color can be obtained in this way. Celluloid strips make beautiful boxes and baskets.

"Jacob's ladder"

A skirt for winter

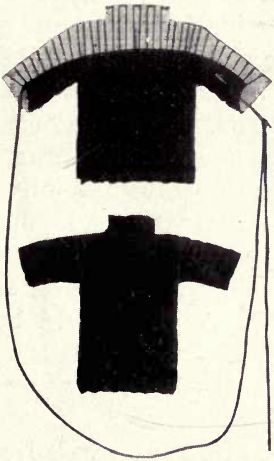


A delightful exercise with the small children is the making of a "Jacob's ladder," or "Pussy-cat stairs," as they are often called. Fold a forty-inch strip of paper, one inch wide, so as to form a right-angle in the middle. Or, if a longer ladder be desired, place one end of a forty-inch strip over the end of another one, at right angles, and fasten with a drop of paste. Fold from left to right, one strip upon the other, holding the strips so as to *always* fold *up*, until you come to the end; then pull out, and behold the stairs! The little fingers will work patiently a long time to achieve this charming result, and much skill of hand will be gained in the doing. Use colored paper for this whenever possible.



A mitten and a cap

The illustrations on this and on the preceding page show some fascinating work for little hands. The looms are made of heavy pasteboard cut in notches, in which the warp of the same material as the woof is strung. Care should be taken to keep the warp straight, and to finish all the edges well. The articles in the illustrations were made by first-grade children in the Ericcson School, St. Paul, Minnesota.



A sweater for the doll

Chapter Four

METHODS OF STRINGING WARP

Material for warp

THE best material for warp in rug and mat weaving is the four-ply carpet warp which comes in half-pound spools. Unless one can match the woof exactly, it is better

Neutral colors

to use a neutral color—dark brown or slate—as it is less noticeable at the ends of the rugs.

The warp should be a continuous string, and when strung should spring lightly beneath the hand. A much firmer edge can be secured by stringing the warp *double* over each rod and in the two adjoining notches.

How to string a warp

This will overcome the tendency of the warp threads to creep toward the center, which, if allowed, will make the edges of the rug too loose. The child should be taught to push the woof threads together with the best tool in the world—his fingers—and in doing so to straighten the warp threads *each time* he weaves, so that they will lie parallel to the rod. It is not the rod which makes a loose edge—it is careless weaving.

Adjust the loom for the required size. Begin at the left and the foot of the loom.

How to string a warp

Leave an end equal to the length of the rug, stretch the warp string over the rod to the head piece, pass it around one tooth, then down to the foot of the loom and tie securely to the first string. Continue two more strings, then pass warp string back to the first notch again and cover the first three strings. The warp will now be double. Proceed as before until you reach the right side of the loom, then come back to the third notch and double the last three strings. Leave an end equal to the length of the rug and tie securely to the next to the last string. The two long ends are intended to run up the sides of the rug after the rods are removed and *before* the rug is lifted from the loom. This gives a neater finish than when the warp string is cut off short. Only experience can teach the tightness with which a warp should be strung. If it be too loose, the work will be uneven and the strings will slip out of the notches. If it be too tight, the strings will pull too much on the head and foot piece of the loom and the weaving at the finish will be difficult.

Bordered rugs

For bordered rugs string the *whole border double.*

For very fine weaving, where it is necessary for the warp threads to *touch* each other

A close warp

in order to produce a design with the woof, string a double warp with the same material as the woof. Then with a blunt steel weaving needle separate the warp threads, twisting one over the other so that all will lie side by side, and secure them by weaving a few times across the loom.

A striped warp

For stripes, string the warp with different colors at regular intervals, using, of course, the same material as the woof. Then weave the woof of *one* color. See illustration of table mat for example of stripes forming squares at the corners.

A plaid effect

For a plaid effect, string the striped warp, as above, and weave the same colors at equal intervals. The silk canvas panels and holder are good examples of plaid weaving.

Warp with fringe

When the warp is of the same material as the woof, and it is desired to extend it to form a fringe, it can be done in the following manner: After the loom is adjusted for the required size, cut the warp strings so as to allow two or three inches beyond the head and foot pieces. If you intend to knot the fringe in some fanciful way after the weaving is finished, allow four or five inches. Take two threads, knot so as to leave the required length for fringe below the foot piece, pass around one tooth, stretch to the

head piece and knot firmly on the upper side, leaving a fringe of the same length there. Knot the strings in pairs in this way until the whole warp is strung. It will be noticed that the rods are placed beneath notches of odd numbers.

In knotting warp strings in pairs it will be found necessary, when the last tooth is reached, to start the next string in the same notch. This will bring *two strings together* and the last one on top of the rod.

Raffia warp

In weaving raffia mats it is better to string the warp in pairs with fringe, as above, on account of the difficulty of splicing a raffia warp. Raffia mats are often woven upon carpet warp.

Warp for Kiz-Kilim rugs

Kiz-Kilim rugs have perforated, or open-work, patterns. To produce this effect, string the warp in pairs as before, only use *two* strings in every notch — that is, *two pairs*, knotting four ends together for the fringe. Use an unbleached, light brown, or slate colored warp.

Fringe for dolls' towels

In stringing warp in pairs for dolls' towels have two strings over each rod and one extending one notch beyond on each side. This makes a piece of fringe for the *edges* of the towel.

Rugs and strips may be made of any

Continuous warp for long strips

length by stringing a continuous warp. After the length has been decided upon, cut the warp strings *twice* as long. Double one string, place it around the first tooth in the foot piece, so that the outside string lies on top of the rod, bring up the two ends firmly to the first tooth in the head piece. Knot securely on the upper side and let the long ends extend beyond the head piece. If the warp threads are a little more than twice the length of the loom they may be brought down at the back and fastened to the foot piece. If preferred, they may be wound on spools or around the tops of the rods to prevent tangling. Continue in this way until the whole warp is strung.

Observe the directions given before for stringing warps in pairs.

How to weave with a continuous warp

It is not necessary to weave the loom full each time, as the last inch is very slow work. When the weaving is near the head piece, draw out the rods, lift the strip from the notches, pass it down to the foot piece, so that the part which was at the head is now at the foot, untie the knots, press the weaving close to the foot piece on the outside, and knot the warp strings as before at the head piece. This can be done as many times as desired.

The warp string on top of the rod is always included with the rod in weaving. This is important to remember, as the string takes the place of the rod when the latter is removed.

Warp string on top of the rod

A Navajo rug

Chapter Five

MATERIALS

Rug yarn

RUG yarns, in beautiful colors, can now be obtained at the shops handling supplies for industrial work. With these coarse, hairy yarns one can get an effect not obtainable from the softer and smoother yarns. It is true that they often break in weaving, but they are easily spliced again, so one can forgive them this shortcoming.

Chenille

Chenille is an ideal material, and the soft velvet-like rugs are a delight to the children. It comes in many beautiful plain colors and in the variegated, which has at intervals several inches of the plain color to match the one chosen for the rug. This chenille is also used for knitting or crocheting long strips for slumber robes, afghans, portières, etc. In knitting, use a No. 4 needle and knit the plain garter stitch. In crocheting, use the plain crochet stitch (single) and a coarse needle. Use shell stitch for the border. Cotton roving is also much used. It is a large, rope-like material, fills rapidly, and comes in beautiful colors.

Chenille used for knitting and crocheting

Cotton roving

Jute

Jute, single, two, three, or four ply, can be used for rugs, but it is not so pleasing either in the weaving or in the result as yarn, or chenille. The effect is like that of a grass rug. This is a good material for stencilled rugs. A plain rug is woven and a pattern stencilled upon it in one or more colors. This is preferable to weaving several colors of this stiff material. Jute is also used for hammocks, but it is not as desirable as *soft* macremé cord No. 12.

Plain and figured silkoline

Plain or figured silkoline should be cut in bias strips half an inch wide. Stretch and pull through the hands until both edges are ravelled. When these strips are woven, the rug or mat will be reversible. Figured silkolines give a pretty mottled effect, especially those in which Turkish colors predominate. Rugs having plain centers and mottled borders, or vice versa, are beautiful. This applies also to chenille.

Cheese-cloth

Strips of cheesecloth can be prepared in the same way. Cut them three-fourths of an inch wide on account of the tendency to ravel. Serviceable face and dish cloths can be made of white cheesecloth. Some of the colored cheesecloths make pretty rugs. When a desirable color cannot be found, the white cloth can be dyed at home.

Dress lining

Soft dress linings come in many beautiful colors. Old pieces may be utilized by cleaning and dyeing. The pieces are cut in bias strips, half an inch in width.

Silk

Pieces of old silk can also be prepared in this way and with continuous warp can be woven in strips for a pillow top, a table runner, or for portières.

Candle wicking

Table mats, wash cloths, and similar articles can be made from candle wicking. For lamp mats, cushion covers and other articles, the material may be dyed and woven in two colors or in two tones of one color. A number of squares can be joined to make a hammock pillow. By stringing the warp of white or colored wicking, and weaving with the same material, a coarse canvas can be made upon which the children can cross-stitch a pretty border and center piece, or an all-over pattern by copying kindergarten designs, or even initials and monograms.

Rope silk or ropetine

Beautiful silk canvas can be made of rope silk, or *ropetine*, a mercerized cotton material, and cross-stitched with another color or tone; or with chenille, making a velvet figure. Two colors, or two tones, may be woven with chenille and silk in a kindergarten design. Beautiful holiday and birthday gifts, such as mats, cushion covers, sachet cases, can be

made from these materials. Glove, mouchoir, necktie, fan, and trinket boxes can be made by weaving the top, bottom, and sides in panels. Foundation boxes, which may be purchased for a few cents, are excellent for this purpose, or they can be made very well from cardboard at home. Make the hinges of ribbon and line the boxes with silk of a corresponding or contrasting color.

Eight-fold Germantown wool

An ideal material for little folks is eight-fold Germantown wool. This soft wool, used for both warp and woof, is excellent for weaving kindergarten designs. The warp can be extended at head and foot of the loom for a fringe. By extending the warp any length desired beyond the head of the loom, long strips for slumber robes, afghans, and such articles can be woven. Carpet warp can be used and a plain rug with colored stripes at each end be woven. A very pretty and easy gift for a little child to make is a holder for the teapot.

Knitting yarn

Navajo yarn

Doll blankets are made of knitting yarn. The warp may be of the same yarn or of carpet warp. Navajo yarn is a tight-twisted yarn used in weaving Turkish and Navajo rugs. (See pages 47 and 92.)

Darning cotton

Dolls' towels are made of darning cotton. String a *close* warp in pairs as directed in

instructions for warp stringing. Baste a piece of canvas at one end and cross-stitch Miss Dolly's initial.

Knitting cotton

Plain white bedspreads, or white combined with a color in a kindergarten design, can be made of knitting cotton, which is a little coarser than darning cotton. Knot a fringe on all sides. Lunch cloths and table covers for Miss Dolly can be made in the same way.

Macreme cord

Soft macremé cord No. 12 is the best material for hammocks. It is better to purchase it in balls rather than in skeins, as it tangles easily.

Raffia

Many beautiful articles can be made of raffia, which is a palm fibre brought from the island of Madagascar. It can be obtained in the natural color and in many beautiful colors. If preferred, one can dye it at home. It should be washed first. While weaving, keep the raffia moist by dipping the fingers now and then in a cup of water. Experience has proved this method to be more satisfactory than to allow the raffia to remain in water and become thoroughly soaked, particularly the colored raffia.

Knitting silk

By stringing a close warp of knitting silk and extending it the required length, shawl straps, suspenders, belts, and garters can be

woven. The rods should be adjusted for desired width. Finish at each end with pieces of silk elastic of the same color, and with buckles.

Angora wool

Angora wool makes pretty Tam o'Shanters.

Books of patterns

Small books containing cross-stitch designs can be found at embroidery and department stores.

Grass twine

Grass twine is useful and economical in weaving baskets. It is used as filling in rope baskets instead of making the rope of raffia, which is more expensive, and also in sewed baskets.

Chapter Six

DIRECTIONS FOR DYEING

A FEW hints with regard to dyeing raffia, cheesecloth, white cord for hammocks, yarns, cotton roving, and other materials, may be found useful. For raffia use the Diamond dyes or Easy dyes. Wash the raffia first. The color will be improved by soaking the raffia a day in alum water, one-half pound to the gallon. Dye once used can be kept in an air-tight dish and reheated whenever needed.

Diamond dyes

Should one be interested in vegetable dyes much information can be obtained at the public libraries. Dr. Washington Matthews speaks of Indian dyes in his article on the Navajo weavers mentioned in this book. "How to Make and How to Mend" also contains some good suggestions about dyes.

Vegetable dyes

In her little pamphlet, *Home Industries and Domestic Weavings*, published by the Associated Artists, 115 East 23d Street, New York City, Mrs. Candace Wheeler has an interesting chapter on "Rag-Carpet Weaving." Her suggestions for dyeing rags apply

Mrs. Candace Wheeler's pamphlet

equally to yarns and to other materials which may be used on hand looms for children. Through her kind permission I am allowed to quote the following suggestions:

"In the early days of this present century a dye tub was as much a necessity in every house as a spinning-wheel, and the reëstablishment of it in houses where weaving is practiced is almost a necessity; in fact, it would be of far greater use at present than in the days when it was only used to dye the wool needed for family knitting and weaving. All shades of blue, from sky-blue to blue-black, can be dyed in the indigo tub; and it has the merit of being a cheap as well as an almost perfectly fast dye. It could be used for dyeing warps as well as fillings, and I have before spoken of the difficulty, indeed almost impossibility, of procuring indigo-dyed carpet yarn.

Uses of the indigo tub

"Blue is, perhaps, more universally useful than any other color in rag-rug making, since it is safe for both cotton and wool, and covers a range from the white rug with blue warp, the blue rug with white warp, through all varieties of shade to the dark blue, or clouded blue and green rug, also, upon white warp. It can also be used in connection with yellow or orange, or with copperas or walnut dye,

Blue universally used

Green in different shades of green; and, in short, unless one has exceptional advantages in buying rags from woolen mills, I can hardly imagine a profitable industry of rag-weaving established in any farmhouse without the existence of an indigo dyeing tub.

Red "The next important color is red. Fortunately, red warps can be bought which are reasonably fast, but the only way to procure red rags in quantity is to dye them, and, although the dye is somewhat expensive, there are two colors, turkey red and cardinal red, which are extremely good for the purpose. Probably these could be bought at wholesale from dealers in chemicals and dyestuffs at much cheaper rates than by the small paper from the druggist or the country store. Copperas gives a fast nankeen-colored dye, and this is very useful in making a dull green by an after dip in the indigo tub.

Copperas

Dull green

Domestic dyes "There are some valuable domestic dyes which are within the reach of every country dweller, the cheapest and best of which is walnut or butternut stain. This is made by steeping the bark of the tree or the shell of the nut until the water is dark with color, and setting it with alum. It will give various shades of yellow, brown, dark brown,

Nut stains

and green brown, according to the strength of the decoction or the state of the bark or nut when used. If the bark of the nut is used when green, the result will be a yellow brown; and this stain is also valuable in making a green tint when an after dip of blue is added. Leaves and tree-bark will give a brown with a very green tint, and these different shades used in different rags woven together give a very agreeably clouded effect. Walnut stain will itself set or fasten some others; for instance, poke-berry stain, which is a lovely crimson, can be made reasonably fast by setting it with walnut juice. Iron rust is the most indelible of all stains, besides being a most agreeable yellow, and it is not hard to obtain, as bits of old iron left standing in water will soon manufacture it. It would be a good use for old tin saucepans, and various other house utensils which have come to a state of mischievousness instead of usefulness Ink gives various shades of gray according to its strength, but it would be cheaper to purchase it in the form of logwood than as ink.

Leaf stains

Iron rust

Ink stains

"There is a strong and well-founded preference among art producers in favor of vegetable dyes, and yet it is possible to use

Vegetable dyes

certain of the aniline colors, especially in combination, in safe and satisfactory ways.

"Everyone who undertakes domestic weaving must know how to dye one or two good colors. Black, of course, and the half-black, or gray, which a good colorist of my acquaintance calls *a light black*. Indigo blue equally, of course, in three shades of very dark and light. Here are seven shades from the three dyes, and when we add white we see that the weaver is already very well equipped with a variety of color. The eight shades can be still further enlarged by clouding and mixing. The mixing can be done in two ways, either by carding two tints together before spinning, or by twisting them together when spun.

The variety of shades

"Carding together gives a very much better effect in wool, while twisting together is preferable in cotton.

Carding and twisting

"Dark blue and white and medium blue and white wool carded together will give two blue grays which cannot be obtained by dyeing, and are most valuable. White and red carded together give a lovely pink, and any shade of gray can be made by carding different proportions of black and white or half-black and white. A valuable gray is made by carding black and white wool

Blue

Pink

Gray

together, and by black wool I mean the natural black or brownish wool of black sheep. Mixing of deeply dyed and white wool together in carding is, artistically considered, a very valuable process, as it gives a softness of color which it is impossible to get in any other way. Clouding, which is almost an indispensable process for rug centers, can be done by winding certain portions of the skeins or hanks of yarn very tightly and closely with twine before they are thrown into the dye pot. The winding must be close enough to prevent the dye penetrating to the yarn. This means, of course, when the clouding is to be of white and another color. If it is to be two shades of one color, as a light and medium blue, the skein is first dyed a light blue, and after drying, is wound as I have described, and thrown again into the dye pot, until the unwound portions become the darker blue which we call medium."

Clouding

Through the courtesy of Mrs. Helen R. Albee, who has done much to revive an interest in rug-weaving, I am allowed to quote the following detailed suggestions on the subject of dyeing from her helpful manual, *Abnákee Rugs*. This little manual treats fully of the "Abnákee Rug Industry," the

Mrs. Albee's manual

"Materials," "Methods of Work," and "Dye Formulas." It was issued through the Riverside Press in 1901.

Speaking of combinations of color, Mrs. Albee says:

Combinations of color

"A careful study of the effects of colors upon each other will show that colors which are in themselves beautiful are often inharmonious when combined. Also, a little of a color may be good, when a larger proportion seems to destroy the balance or harmony. Success in this matter is largely a matter of close observation and experience, although some persons have a natural feeling or instinct regarding color which is seldom in error. Strong colors should never be used, especially greens. Though they may be modest in the piece, when worked in with other colors, they have an unfortunate way of becoming intensified tenfold. The safest tones for an amateur to deal with are dull gray green, yellow green, and a soft, full, but dark olive. In striking a certain key in color it should be maintained throughout. Thus, if a full rich color predominates, rich dark colors should be used through the whole scheme. If a light tone is the body color, soft light tones of other colors will be found most harmonious.

Safe tones

Thus, for example, a rug for a library, or a hall, in which a good deal of rich terra cotta appears, should have a border or design worked in dark blues, full shades of olive green, and dull yellow. There is an apparent exception to this in the use of dull reds, old ivory, and black as seen in Bokhara rugs. But if studied, the cream color is very dull, and is used in such small quantities as to be quite subdued by the black that is used freely in the pattern. Old rose, warm golden browns, and olive may be used effectively. A light Gobelin blue may be worked with ivory, old pink, light dull olive, and the outlines can be either a dark yellow brown or very dark bronze green. An ivory center is lovely with an old pink border worked in green. A tan center may be combined with old rose, sage green, bronze green, light yellow, cream color, and dark brown outlines. Indigo blue, forest green, and dull yellow are excellent colors when combined. A great variety of beautiful rugs may be made by using only blue and white, and unless one wishes to go extensively into dyeing, it might be well to choose a certain simple color scheme such as blue and white, red, black, and ivory, and abide by it. Let it be remembered that white in rugs is not

Colors in rugs

Use of white

white, neither is it a delicate cream. Unless it is decidedly yellowish or even grayish in tone, when in combination with other colors, it becomes a staring white that is anything but artistic. I dye my cream colors, just as much as I do dark reds or greens.

Planning a color scheme for a rug

"I have been asked many times what is the best way to plan a color scheme for a rug. This is a point I cannot determine for another. Some may find help in making water color sketches of what they wish to do. In my own work I never use them, as it requires making a reduced drawing of great accuracy, and much time to color it. Often I plan a combination mentally, and match it up from the dyed flannels I always have on hand. Other times I vary the scheme of some rug I have already made, experimenting with different combinations, using other rugs as if they were books of reference. I have discovered one rather curious thing, which is, that when all my experimenting is done I find some particular color scheme fits a certain rug as no other does. It seems to clothe or to fulfill the pattern as if it belonged personally to it. When I once discover this elective affinity of a pattern for its special coloring, I never make it again save in that one guise.

"Much skill can be shown by an artistic worker in the use of slight shades of difference in the same color. For example, in the plain center of a rug, several tones representing shades of the same color will give the effect of a play of light on a silky surface, which is very beautiful. By using material that has been dyed a trifle darker at one end of the rug, and working in gradually lighter tones, the result is surprisingly effective. To do this, each three or four yards should be dyed with these slight differences of tone; then when within thirty strips of the end of one color (more or less, according to the width of the rug), work in a broken line of the next tone all across the rug. Then use a few rows (not worked in single rows, however) of the first color across the entire rug, then a wider broken line of the second color. Broken lines blend better than continuous lines do. The portions of the second line should fall above the broken spaces left in the first line (in the same way that masons lay bricks), then a little more of the first color, using less and less of it, and increasing the width of the second in masses, until the first color has become only broken lines upon the ground of the second color. All the way through, any changes of

Shading

Directions for shading

color should be merged in this way. Be sure to work this method from side to side across the rug, as the frameful is filled.

Coloring

"This is the most difficult feature of the whole handicraft, the actual coloring, and yet for fine effects I should recommend only the use of hand-dyed materials. Goods dyed by professional dyers are perfectly uniform in color throughout, and rugs made of such material will have nothing of that difference of tone, that play of color, that is absolutely necessary for beauty.

Dye kettles

"In dyeing use only brass, copper, granite, or porcelain kettles, unless one goes into it on a large scale and uses regular machinery. Brass and copper vessels are to be preferred, while iron, or tin showing iron, are to be carefully avoided, as the mordants have a great affinity for iron and ruin the color. I use a large brass kettle holding about five gallons.

Mordants

"For mordants I use Glauber salts and sulphuric acid, and with the weight of cloth I use, it takes 3 oz. of Glauber salts and ¾ oz. of sulphuric acid (full strength) to each six yards of flannel. I use a one-ounce Phenix graduate (American standard) measuring glass, and as full strength sulphuric acid has about twice the specific gravity of water,

one should measure by the scale engraved on the right-hand side of the glass. The left-hand scale is based upon the standard unit of weight, which is water.

"In using sulphuric acid I dilute it in a little cold water in a cup by pouring the acid on to the water, as sulphuric acid in uniting with water causes a chemical reaction. Where a large quantity of acid is used this reaction is accompanied by a sudden burst of steam, if the water falls upon the acid. But in a small quantity as this, there is no possible danger of accident if the acid is poured on the water. Sulphuric acid should be closely stoppered and used with care, as it is corrosive, eating holes in cotton or linen fabrics. With ordinary precautions it can be used without the least difficulty.

Uses of acids

"Glauber salts are too well known in commerce to need description, and are used to neutralize the acid. The two in combination do not injure woolen fabrics, but merely set the dyes.

Salts set the dyes

"In preparing the dye bath allow three gallons of water, and ¾ oz. of sulphuric acid; stir thoroughly and add 3 oz. Glauber salts to six yards of cloth. Then add the dyestuff in required proportions. Stir thoroughly as each ingredient is added, for the evenness

Preparation of a dye bath

of the dye depends upon the thorough distribution of the mordants and color in the dye bath. Generally it is advised to strain the dye before it is added, but, as an even tone is not the desired result for this special handicraft, I never follow this suggestion.

Coloring depends on temperature

"The proper temperature for introducing the color in the bath is not over 150° F., but if one has not a bath thermometer, the temperature must be very hot, yet far below boiling point. Temperature plays a great part in dyeing, for if the dye bath is too hot when the cloth is introduced, the dye, having a great avidity for wool, will be absorbed unequally by the cloth, the ends and outside folds of the cloth absorbing more color than is desired, and the inner folds will have less. I am not discussing the process of dyeing as it should be done on a large scale with vats and suitable reels, etc., but as it is likely to be done by an amateur, in a small way. When the bath is too hot, the cloth takes the dye unequally and is quite spotted. A little irregularity is necessary for a play of color, but it should be secured in a definite way and only to a certain degree, and not as the result of accident. If the cloth has come out spotty, it may be redipped, having added more dye and mordants to the bath,

but it will come out a darker shade. If the bath is anywhere near the boiling point before the cloth is dipped, reduce it by adding a quart or two of cold water."

Process of dyeing yarn or raffia

Before dyeing yarn or raffia, bind the skeins loosely in several places to prevent tangling. "Having prepared the bath, gather the cloth in the right hand at half a dozen places along one selvedge, and drop it in, spreading it at once, using two stout sticks, lifting it up and down continually so as to expose all parts to the dye. The temperature should be increased to the boiling point and continued for three-quarters of an hour. Then lift the cloth up and drain it, then rinse in cold water, wring dry, but do not press with an iron, as the soft wooly texture is very desirable. When a quantity of the same color is desired, the same water can be used again by adding acid and Glauber salts, together with more dyestuff with each fresh dip of cloth. It must be stated, however, that the color will not be so clear with succeeding dips, but that does not matter, as a difference is desired. The process of dyeing is very delicate, and the utmost precision must be observed in following proportions and directions regarding temperature, etc. Dyeing is more successful in clear weather

Clear days are best for dyeing

than on rainy days, and soft water is required to get good results. If water contains much lime or earthy salts it is unfit for dyeing, and must be neutralized by acetic acid. In such cases it would be still better to use rain water.

Vegetable dyes and chemical dyes compared

"There is a curious conviction prevailing in some quarters that beautiful durable colors are obtainable only from vegetable dyes. My first experiments were with barks, mosses, etc., but the difficulty of getting them, the enormous amount necessary to dye any quantity of goods, the tedious process in their use, and the fact that after all only a narrow range of colors is obtainable from them, compelled me to abandon them altogether. I began to investigate chemical dyes, and to gain information I applied to one of the largest woolen mills in New England, one which maintains a high reputation for the class of goods it manufactures; also to two wholesale houses dealing in all kinds of dyestuffs; and finally to one of the best experts in color in the country. Their verdict was unanimous, and is summed up in the opinion of the expert which he expressed in a letter to me on this question:

"'In regard to the use of vegetable dyes, I would say that they have almost disappeared

from commerce, certainly for the purpose of dyeing fabrics.

"'We know, of course, that there are strong prejudices still existing in the layman's mind in regard to the use of aniline colors, who supposes that they are not only fugitive, but that the resulting tones are harsh and unattractive. This, unfortunately, was so twenty-five years ago, and the impression made then upon the layman's mind has not been changed during all these years; but I can assure you that all the beautiful silk goods, tapestries, cloths, and all the colors which we see in fabrics to-day, are made, without exception, from aniline colors, which are immeasurably more permanent than are the vegetable dyes used up to, say, 1875.'

Aniline colors

"In using my range of eight colors I provide myself with large, strong glass bottles in which I keep my diluted colors. I use a pint measure for diluting the dyes. In preparing the fluid I put one half or one quarter of an ounce of dry color, whichever amount the formula calls for, into the pint measure and mix it thoroughly with a little cold water. The reason for using cold water is that the dyes are a tar product, and if mixed with hot water first, they are apt to

Formulas to be followed

grow waxy under the heat and not dissolve readily. Having dissolved them, I fill up the measure with hot water, stirring all the time. This makes a pint of liquid which is of uniform strength under all circumstances, and every formula is based upon this invariable pint measure of water. These formulas I have tried over and over again. They are made with special reference to the grade of flannel I have adopted, and doubtless will vary in results if used on other weights or weaves of wool goods."

DYE FORMULAS

NO. 1. DARK TERRA COTTA

Dark terra cotta

Dissolve ½ oz. of dull red in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Take full pint measure of dull red dye and 4 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: ¾ oz. sulphuric acid and 3 oz. Glauber salts. Boil ¾ of an hour.

NO. 2. FULL TERRA COTTA

Full terra cotta

Dissolve ½ oz. of dull red in 1 pint of water.

Use full pint measure of dull red dye to 6 yds. of cloth.

Mordants: ¾ oz. sulphuric acid and 3 oz. Glauber salts.

NO. 3. LIGHTER TERRA COTTA

Lighter terra cotta

Dissolve ½ oz. of dull red in 1 pint of water.

Use 22 tablespoonfuls of dull red dye to 6 yds. of cloth.

Mordants: ¾ oz. sulphuric acid and 3 oz. Glauber salts.

NO. 4. RICH OLD RED

Rich old red

Dissolve ½ oz. of dull red in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 24 tablespoonfuls of dull red dye and 3 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as No. 1.

NO. 5. DULL OLD ROSE

Dull old rose

Dissolve ¼ oz. of dull red in 1 pint of water.

Dissolve ¼ oz. of bright blue in 1 pint of water.

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Use 16 tablespoonfuls of dull red dye, and 1 tablespoonful of bright blue dye, and 3

tablespoonfuls of dull yellow dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 6. OLD PINK

Old pink

Dissolve ¼ oz. of dull red in 1 pint of water.

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Dissolve 1 oz. of dark blue in 1 pint of water.

Use 6 tablespoonfuls of dull red dye, and 3 tablespoonfuls of dull yellow dye, and 1½ teaspoonfuls of dark blue dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 7. FULL YELLOW

Full yellow

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 6 tablespoonfuls of bright yellow dye, and 5 tablespoonfuls of dull yellow dye, and 2 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 8. RICH DULL YELLOW

Rich dull yellow

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Use 12 tablespoonfuls of yellow dye and 6 tablespoonfuls of dull red dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 9. DARK TAN YELLOW

Dark tan yellow

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Use 14 tablespoonfuls of dull yellow dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 10. LIGHT OLIVE TAN

Light olive tan

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Dissolve 1 oz. of dark blue in 1 pint of water.

Use 6 tablespoonfuls of bright yellow dye, 4 tablespoonfuls of dull yellow dye, 1½ tablespoonfuls of dark blue dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 11. OLD IVORY

Old ivory

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of drab in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Use 1 teaspoonful of yellow dye, and 1 teaspoonful of drab dye, and ¼ teaspoonful of dull red dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 12. RICH NAVY BLUE

Rich navy blue

Dissolve 1 oz. of dark blue in 1 pint of water.

Use full pint measure of dark blue dye to 6 yds. of goods.

Mordants: 1 oz. sulphuric acid, 3 oz. Glauber salts. Boil 1 hour.

NO. 13. DARK PERSIAN BLUE

Dark Persian blue

Dissolve 1 oz. of dark blue in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 10 tablespoonfuls of dark blue dye, 6 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as in No. 12.

NO. 14. GOBELIN BLUE

Gobelin blue

Dissolve 1 oz. of dark blue in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 6 tablespoonfuls of dark blue dye, 4 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as in No. 12.

NO. 15. LIGHT GRAY BLUE

Light gray blue

Dissolve 1 oz. of dark blue in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 3 tablespoonfuls of dark blue dye, 2 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as in No. 12.

NO. 16. LIGHT SAGE GREEN

Light sage green

Dissolve ¼ oz. of green in 1 pint of water.

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Use 10 tablespoonfuls of green dye, 2 tablespoonfuls of bright yellow dye, and 1½ tablespoonfuls of dull red dye to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 17. LIGHT OLIVE

Light olive

Dissolve ¼ oz. of green in 1 pint of water.

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Use 16 tablespoonfuls of green dye, 4 tablespoonfuls of bright yellow dye, and 3 tablespoonfuls of dull red to 6 yds. of cloth.

Mordants: Same as in No. 1.

NO. 18. DARK MOSS GREEN

Dark moss green

Dissolve 2 level teaspoonfuls of green in 1 pint measure of water.

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Use full pint measure of green dye and 15 tablespoonfuls of bright yellow dye to 6 yds. of cloth.

Mordants: 3 oz. of Glauber salts and 1 oz. of sulphuric acid. Boil ¾ of an hour.

NO. 19. GOLDEN BROWN

Golden brown

Dissolve ¼ oz. of dull yellow in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Dissolve ¼ oz. of green in 1 pint of water.

Use 20 tablespoonfuls of dull yellow dye, 5 tablespoonfuls of dull red dye, 15 tablespoonfuls of green dye to 6 yds. of cloth.

Mordants: Same as in No. 18.

NO. 20. DARK BRONZE

Dark bronze

Dissolve ¼ oz. of green in 1 pint of water.

Dissolve ¼ oz. of dull red in 1 pint of water.

Dissolve 1 oz. of dark blue in 1 pint of water.

Dissolve ¼ oz. of bright yellow in 1 pint of water.

Use 8 tablespoonfuls of green dye, 12 tablespoonfuls of dull red dye, 4 tablespoonfuls of dark blue dye to 6 yds. of cloth.

Mordants: Same as in No. 18.

Redip in 4 tablespoonfuls of green dye and 5 tablespoonfuls of bright yellow dye.

Mordants: Repeat the one above.

These formulas are the basis for numerous tones

"These formulas can be taken as the basis of many other tones and shades which can be secured by a slight alteration of proportions. By adding a trifle more dull red, green, indigo, or drab liquid dyes, a color can be darkened. By using less of these than the formulas call for, the colors will be lighter. By using more of dull or bright yellow a color can often be made richer without darkening it. Beginners are cautioned against making changes until they become familiar with the dyes. In making new experiments, try them on yard lengths,

carefully subdividing any given formula for both dyes and mordants, and increasing the proportion of any particular color desired. If the cloth should fail to take up the dye properly after boiling the full time, increase the quantity of acid, lifting the cloth out when adding the acid to the dye bath."

Excellent suggestions by Mrs. Albee for color schemes in stripes may be found on pages 64 and 65.

[Mrs. Albee is prepared to furnish any of the foregoing dyes at 20 cents an ounce. Her address is Mrs. Helen R. Albee, Pequaket, Silver Lake P. O., N. H.]

Chapter Seven

METHODS OF SPLICING MATERIALS FOR WEAVING

Woolens, fine worsteds, ravelings, and cottons

SUCH materials as carpets and oriental wools, fine worsteds, carpet ravelings, darning and knitting cotton should, in splicing, be run past each other. In weaving, run the wool through the warp to the very end. Start the new piece a few warp threads back (about an inch), being careful to go over and under exactly the *same* warp threads as when finishing the end. As you pass these threads you will find you are taking up the right warp threads, and that no mistake has been made. It is best to run the threads past each other in the *middle* of the mat rather than on the *sides*. The children learn this method of splicing very quickly and the result is much more satisfactory than knotting, because the back of the rug or mat will be smooth. As Mrs. Wiggins says: "There should never be a wrong side to work any more than there should be to folks."

Silkoline, cheese-cloth, rags

In splicing such materials as silkoline, rags, candle-wicking, chenille, and macremé

Candle-wicking, chenille, and macremé cord

cord, lay the end of one piece over another, each lapping about one-quarter inch, and sew securely with silk or thread of like color. Cut off the selvedge ends of rags. These strips can be run past each other, but the work will not be so smooth.

Germantown wool, heavy worsteds, and rope silk

In splicing Germantown wool, heavy worsteds, or rope silk, thread a worsted needle with one strand obtained by unwinding the wool or silk, lay one end over the other, and sew over and over. Twist the part just sewn between the thumb and finger and the splicing will be hardly visible.

When weaving stripes, splice the wool so that the piecing will come on top of the rod. In this way the new color will start at the edge of the rug, as it should, and the number of loops on the rod will be the same on each side. Consider the *under* side of the weaving as the *right* side. It is always smoother and cleaner, and the splicing can be done more neatly on top of the rod.

Raffia

Splicing raffia is the most difficult of all, and the method used in braiding and basket weaving is the best. As you near the end of a strip in weaving it usually becomes narrower Find another strip having a narrow end, and place one over the other, securing, if necessary, by winding a very narrow piece

—just a thread torn from a long piece—and fastening this by sewing a few times over and over. Or, the two narrow ends may be run past each other, as in carpet ravelings. Care should be taken to have the splicing the same width as the other parts of the weaving, so that the spliced parts will not be noticeable.

Leather, leatherette, and celluloid strips

Leather, leatherette, and celluloid strips should be long enough to extend the entire width and length of the frame without splicing. The ends can be cut, as is done in paper weaving, or turned in some pretty way like that in the splint work.

The neatest way to splice chenille is to tie it. Pick off the bits of chenille from the fine threads which run through the center of it. Then tie to the new piece which has been similarly treated, making a double knot close up to the chenille. Cut off the fine ends, but not too close. This makes a strong, invisible splicing.

Chapter Eight

RUG AND MAT WEAVING

ON account of adjustability both ways, the Perfection Loom is preferable for rug and mat weaving. Little folks weary of a rug 9 x 12 inches before it is finished. A rug 7 x 10 inches does not require as much time or material, and it usually fits the doll house better. Bordered rugs can be woven equally well on any of the looms, as all have perforations for the extra rods which are to keep the center straight.

The simplest rug for a child to make is one with a plain center and end borders. These may be of a darker tone than the center of variegated chenille, if that be the material used, black, or two or three tones of a contrasting color. Rugs with stripes should follow next. For the first one, alternate the body color with one contrasting color. For instance, a rug of tan color might have a stripe of pale blue, brown, or dark green, near each end—not a solid stripe of the chosen color, but alternated with the tan color. (See rugs, page 158.)

Care should be taken to have the same number of loops of a color on each rod.

The next step would be stripes composed of several colors, without any attempt at design. It is well to separate these stripes from the body of the rug with black or old gold; or, in the case of light colors, with white or tan. A good effect is obtained by toning the stripe from shades on the outside to tints in the center. When a child has acquired some skill in weaving and can weave a simple rug *well*, he may draw and color simple designs and weave a more elaborate rug.

Squared paper in one inch, one-half inch, and one-quarter inch can be obtained in school supply stores. The one-inch paper is best for demonstrating patterns to the class. The children can copy the teacher's patterns with one-inch tablets laid on the desks or, better still, on the squared paper. After some practice of this kind let them color the pattern with crayons or water colors, and fill in the background.

Pattern

To prepare a pattern for weaving use the one-quarter inch squared paper, as the warp strings are about that width apart. Encourage the children to invent some *simple* pattern with the tablets. They will readily

Drawing and coloring the pattern

see that a tablet will cover sixteen of the quarter inches, and it will be easy to draw and color the pattern, which should then be pasted upon stiff cardboard. After a few woof threads have been woven at top and bottom of the loom, baste the pattern to them on the under side. It is better to weave the outer edges of the rug first, as the rods help to keep the whole pattern straight. After this is done, begin the center and join to the other, weaving by passing the woof thread through the loop on the warp thread. Some prefer to weave with two or three needles straight across the loom, looping one color into the other. Care should be taken to keep the warp strings *straight* and the weaving smooth.

How to begin pattern weaving

These designs can be drawn and colored in the regular drawing lessons in the upper grades and sent to the primary classes to be woven in the rugs, thus fostering a community spirit in the school.

Rug yarns should always be *broken*—not cut. Cutting wool leaves a blunt end which is always unpleasantly visible. Begin the weaving at the *bottom* of the loom and leave several inches of wool to run up the loops at the side of the rug when the rod is drawn out. As you continue to weave, break the

wool near the center of the loom, weaving to the *end* of the thinnest part. Splicing should be done by "running by," as described in the chapter "Methods of Splicing Materials for Weaving." Stripes should be placed at a short distance from each end, varying from three fourths to one and one-half inches according to the size of the rug. These plain ends are woven with the same color as the body of the rug. If desired, these stripes may occur at regular intervals through the entire rug. Different colors in stripes should be spliced near the center of the rug and not near the rods, where the ends might work out. Weave through the first set of stripes, then turn the loom around and weave the same at the other end. Finish by weaving from one set of stripes to the other Always push the woof *toward* you. Be sure to have the children pack the woof threads close to the head and foot of the loom, to allow for pushing the woof back to the ends of the warp threads when the rug is removed. Almost all children pack too tightly in the center of the rugs. The latter are much smoother and prettier if the woof threads lie close together without crowding. The warp strings should always be entirely covered. Caution the

children about pulling the material too tightly *across* the loom. It should lie *easily* around the rods. Be sure to have the warp strings straightened, either with the fingers or a coarse comb, *each time* the child weaves across the loom. The warp threads must not be allowed to creep toward the center of the rug. Before removing the rug from the loom, shear off all the loose ends and roughness by holding the left hand under the rug and pushing it up close to the shears. Then brush with a stiff brush. Draw out the rods and lift the rug from the loom. Push back the woof threads to the ends of the warp. Measure your stripes across the rug to be sure that they are exact. All weaving is improved by pressing. Use a warm, not hot, iron and press between *woolen* cloths to avoid the "shine." The *under* side of the weaving is the right side.

Bordered rugs

Bordered rugs are interesting and the children delight in making them. Adjust the loom for the size required and decide how wide the border is to be. For a rug 9x12 inches it should be two inches wide, and one inch wide for a rug 7x10 inches. It is necessary to have an extra pair of rods for the center, if one desires a smooth and well finished rug. The blunt steel weaving

A table mat made from carpet wool

needle should be used for bordered rugs. Weave the border at the foot of the loom. This extends the entire width. The measure for the border should include the head and foot pieces of the loom, as the woof is to be pushed back to the ends of the warp strings when the rug is finished. Turn the loom around and weave the border at the other end You will now have the ends of the rug woven. Place the extra

rods *behind* these borders and through the perforations for the required width of the side borders. These rods outline the oblong for the center of the rug and serve to keep it straight. Weave the right and left borders around both rods as usual, until they meet those at the top and bottom of the loom. The whole border is now finished and the center may be woven. Begin at the bottom of the oblong and as you come to the border on each side, run your steel needle *through the loops* which are around the rod, but do not go around the rod itself, since doing so would make a ridge in the rug. It is a good plan to hold the loop open with a large pin, then draw the woof threads tightly and firmly through it, so that the work will be flat and smooth when removed from the loom.

These rugs are very beautiful and can be made in an infinite variety through the use of different colors and materials and by reversing the center and border. They are especially attractive made of chenille in two tones of a color, or with plain center and mottled border or vice versa. In the latter case, select one of the colors in the mottled chenille for the center of the rug Carpet yarns, Germantown wool, Navajo yarns, silkoline, cotten roving, or jute may be used.

Telephone and heel rugs

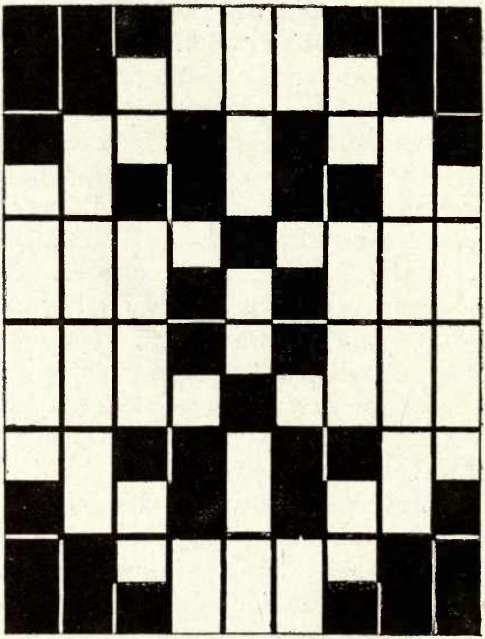
These little rugs are useful on the telephone table to set the telephone upon, or as "heel rugs" under the piano pedals to protect the carpet from the pressure of the heel.

Stencilled rugs

The community idea can be carried out in various ways. Let the children of the lower grades weave *plain* rugs of jute, raffia, carpet yarn, or other material and send them to the Domestic Art classes. Suitable designs can be prepared during some regular period of work and *stencilled* at another. Applied art affords greater pleasure than merely posting the design in an exhibit, and the larger experience is most beneficial. A number of these small rugs can be woven of the same color, sewn together to form a large rug or table cover, and then stencilled in one or more colors. The sewing can be done during the regular sewing lesson. These rugs are often made for the school, office or hall. Sometimes they are sold at some bazaar and the proceeds used to buy something for the school.

Applied art

The rug shown in the illustration on page 90 was woven by fifty-four children in second grade. It required fifty-four rugs, 6x12 inches, of which twenty-four were old rose, twelve were gray-green, and eighteen were mixed, half old rose and half gray-



Another community rug

green. The method of piecing the strips together is very simple. Each strip should be carefully pressed, then placed side by side with others on a table or other flat surface. Use warp or linen thread and a blunt steel weaving needle. Run the needle through a few loops in one strip, catch the warp string which passes through them, then cross to the opposite strip and do the

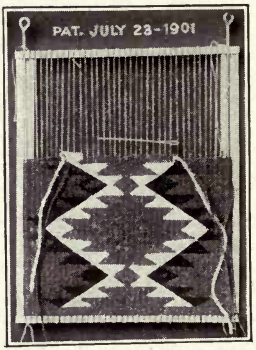
same. After the strips are sewn together the large rug should be carefully pressed.

Long strips woven with a continuous warp, as described in the chapter on "Methods of Stringing Warp," can be sewn together for large rugs or table covers.

The children's weaving should be kept in bags furnished with a draw-string and marked with the child's name. Materials sufficient to weave the mat or rug, needles, and if possible a pair of scissors should be kept in the bag, which should be hung on the child's nail in the wardrobe. If the period for industrial work is at the beginning of a session, it will be easy to bring the bag to the desk when entering the room; at other times, the children could march through the wardrobe and get the bags. This always saves work on the part of the teacher or monitors.

On the small looms the long wooden needles can be used instead of a heddle to raise the warp threads. Run one needle through the warp, turn it on edge to raise the shed, as it is called, then pass another needle with the woof thread through the open shed. Old-country weavers wind little skeins around the thumb and little finger, and weave by passing these through the warp threads instead of using a needle. In this

way little splicing is needed. These little skeins can be seen in illustration of square loom. (See illustration of Pillow Loom, page 19.)



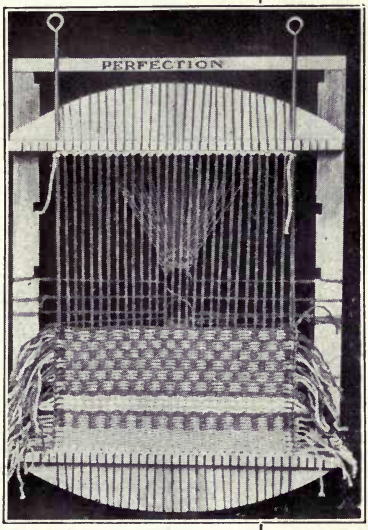
A Navajo rug

Chapter Nine

HAMMOCKS

HAMMOCKS of four lengths may be made on the Perfection Loom, or of one length on the Hammock Loom Board.

The old pasteboard forms are no longer used for three reasons: first, it is difficult to weave a good hammock upon them, as the pasteboard is easily broken; second, it entails too much work on the teacher to prepare them; third, it is a waste of material, as the form can be used only once. The Hammock Loom Board (see illustration on page 95) has taken the place of these old pasteboard forms. The Perfection Loom with its curved ends is preferable, as it is adjustable both ways, the rods keep the edges straight, and it can



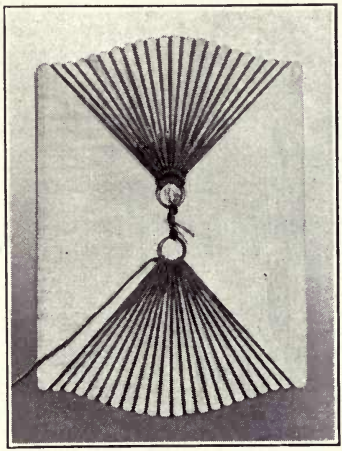
Perfection Loom with hammock attachment

be used for rugs as well as for hammocks.

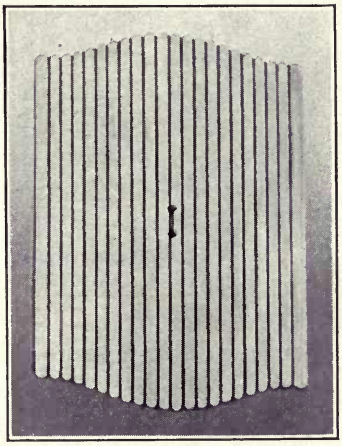
Materials

The best material for hammocks is soft macremé cord No. 12, although single jute can be used. Stripes of one or more colors can be woven at each end, or at intervals through the hammock. A gray, white, or tan ground with gay Roman stripes at intervals, makes an attractive hammock. By weaving two colors alternately, the stripes will be lengthwise; if two colors are alternated several times, then the last color repeated, the result is small squares. A very pretty hammock can be made by stringing the warp of different colors in order to make lengthwise stripes. Use a neutral color for the woof. The different colors in such a warp should be spliced carefully by laying one end of the cord over the other and sewing with silk or cotton of the same color. One strand of the cord can be used for this purpose. The change in color should be made just below the rings, where the weaving at that point will conceal the splicing. Weaving two woof cords at the same time gives a pretty basket weave. These can be alternated in the same way as the single cords, making lengthwise stripes or squares.

Two rings are required for each hammock—the one-inch size for hammocks



Back of loom, showing method of stringing warp through rings for hammock



Front of Hammock Loom Board after warp is strung

woven on the loom and five-eighths or three-quarter inch for use on the loom board. These rings should be of the best quality, as the cheaper ones pull out of shape during the weaving. Use a blunt steel weaving needle.

Length of warp

The length of warp required for hammocks woven upon the Perfection is thirty-two yards for a 9 x 12 hammock, and twenty-two yards for a 7 x 10 hammock. Hammocks woven upon the loom board require eleven and one-half yards for the warp. A good way to measure warp is to use a yard ruler notched at both ends. After winding the

Directions for making hammocks on Perfection Loom

How to measure the warp

required number of yards—be careful not to *stretch* the cord—slip it off the ruler. The long skein can now be slipped through the rings easily without tangling.

The long skein

How to adjust the rings on the Perfection

To adjust the rings on the Perfection, tie two rings together and fasten securely to the loom at top, bottom, and sides of the loom, as seen in the illustration. This must be carefully done to insure the rings being in the exact center and the tie strings taut enough to prevent sagging and getting out of place during the weaving. In giving the lesson to a class, allow two children to help each other.

To adjust the rings on the loom board

To adjust the rings on the loom board, tie two rings together, then place between the holes in the middle of the board. Pass a thread through the holes and tie securely.

How to string the warp on either loom or board

Fasten the warp to the upper ring by buttonhole stitch, leaving fifteen inches to weave the warp strings together at that place. Bring the warp up over the face of the loom, or board, back to the second ring, pull the long skein of warp through the ring—always the *same* way, either *over* or *under* the ring—then back over the face of the loom or board, again to the upper ring, and so on until the whole warp is strung. Fasten by buttonhole stitch to the second ring, leaving fifteen

inches as before. If the warp has been strung on the loom, the *first* and *last* warp strings should lie on *top of the rods*. The warp should be tight enough to spring beneath the hand, but not tight enough to pull the rings out of shape. The hammocks strung on loom boards should be examined before the weaving is begun, to see that the warp is not too loose.

To weave at the rings

Draw the fifteen inches of cord through the warp cords. Press the cords flat, so that they lie side by side, and weave across, using the blunt steel needle. Pass the cord through the ring, drawing the cord up to form a semicircle, then down the side with one buttonhole stitch, or if preferred pass it once through the cord at the side. Then weave to the other side, drawing the cord up to form a semicircle; make one buttonhole stitch in the side (or, as above) and pass through the ring as before. Continue this as far as desired, fasten at the ring, and instead of cutting off the end run it into the weaving until it is secure and invisible. Careful finishing adds a great deal to the appearance of any kind of work.

The most satisfactory method to stay the woof cords so they will not slip out of place when the hammock is removed from the

Securing the woof cords at head and foot of hammock

loom, is to make a line of buttonhole stitching at each end of the loom, close to the head and foot pieces, or, on the board, about where the curve for the dip commences. This is preferable to the old *roping*, as it does not get out of place.

How to make the stay cords

Turn the side of the loom, or board, toward you, with the foot piece to the right. Fasten a cord four times as long as the width of the hammock around the rod (on the loom, or first warp cord on the board) at the farther edge, leaving three and one-half inches for fringe. Make a regular buttonhole stitch around each warp string across the loom and fasten in the same way at the opposite rod, leaving three and one-half inches for fringe. Repeat this at the other end of the hammock. These are called the stay cords. (See hammock on Perfection Loom, page 93.)

The finishing cords for sides of hammock

It has been the custom to finish the sides of the hammock *after* it was woven, but experience has proved that it is a hard matter for little fingers to separate the many threads of the fringe accurately and that it is better to finish the sides as the weaving progresses. Tie a cord five times the length of the hammock to each rod at the foot piece, if you are weaving on the loom, or to the first warp string on the board, leaving three and one-

half inches for fringe. Let these finishing cords hang at the sides until you are ready for them.

The woof cords

Cut the woof cords twice the width of the hammock. This allows for a fringe of three and one-half inches at each side. Children can wind the cord around a stick or piece of pasteboard of the right length and then cut at each end; or they may measure with a ruler each time. Care should be taken not to *stretch* the cord in measuring.

Directions for weaving hammock

Beginning at the foot of the loom, weave one cord across, pressing down close to the stay cord. Then weave a second cord and bring up the two cords over the warp cords which lie on top of the rods (or the warp strings on the edges of the board). Then with your long finishing cord make a buttonhole stitch over the stay cord and the two woof cords (one pair) and around the rods to keep the edges straight. Be very careful to keep this buttonhole stitching at the sides very *loose*, or it will be difficult to remove the rods. Now weave four woof cords and bring up the ends on top of the rods as before. With the finishing cord make one buttonhole stitch over these four cords (two pairs) and around the rods, *loosely*, as before.

Continue to weave the hammock and

buttonhole the sides in this way until it is finished, leaving three and one-half inches of the finishing cord at the head piece for fringe. Care should be taken to keep the warp strings *parallel to the rods* while weaving. Have the child straighten them each time he weaves across the loom. Be careful to have the purl of the buttonhole stitch lie straight and firm on top of the rod and toward the outer edges of the hammock. When the hammock is finished, turn the loom face down, comb out the fringe, and cut off the half inch which has frayed in weaving.

Cut the rings apart, draw out the rods, and lift from the loom.

Roping the sides of the hammock

Some teachers prefer to rope the sides of the hammock after it is woven. As explained before, it is more difficult to do, is not as firm as the buttonholing, and does not present as neat an appearance. To rope the sides, double the long finishing cord, slip one half under the first warp thread, and under the first five threads of fringe. Stretch two woof threads firmly across the hammock, holding the fringe threads down with one hand. Wrap under the next five fringe threads with the upper finishing cord. Cross the two finishing cords so as to bring the lower one

on top, stretch two more woof cords as before, pass the finishing cord under the five fringe threads, and so on, until the roping is finished. It is preferable to rope the right and left sides of the hammock alternately. Fasten the finishing cord at the top of the hammock by tying the two ends together, and cut even with the fringe.

Another method of weaving a hammock

If a lighter fringe is desired, cut the woof cords twice the width of the loom, plus twice the width of the fringe. Weave across the loom, leaving enough for fringe at the side, then *around* the rod and back again, leaving fringe of the same length as the other. Bring both ends up on *top* of the rod. Alternate the next woof cord, leaving fringe on the opposite side; or two or three loops may be made on one side with fringe on the other. In that case the buttonhole stitches on the edge must sometimes take up loops and sometimes fringe threads. Hammocks made in this way could be knotted in some fanciful way across the space where the loops come. In order to do this, allow for a longer fringe, as the knotting requires more cord. (See page 157.)

Chapter Ten

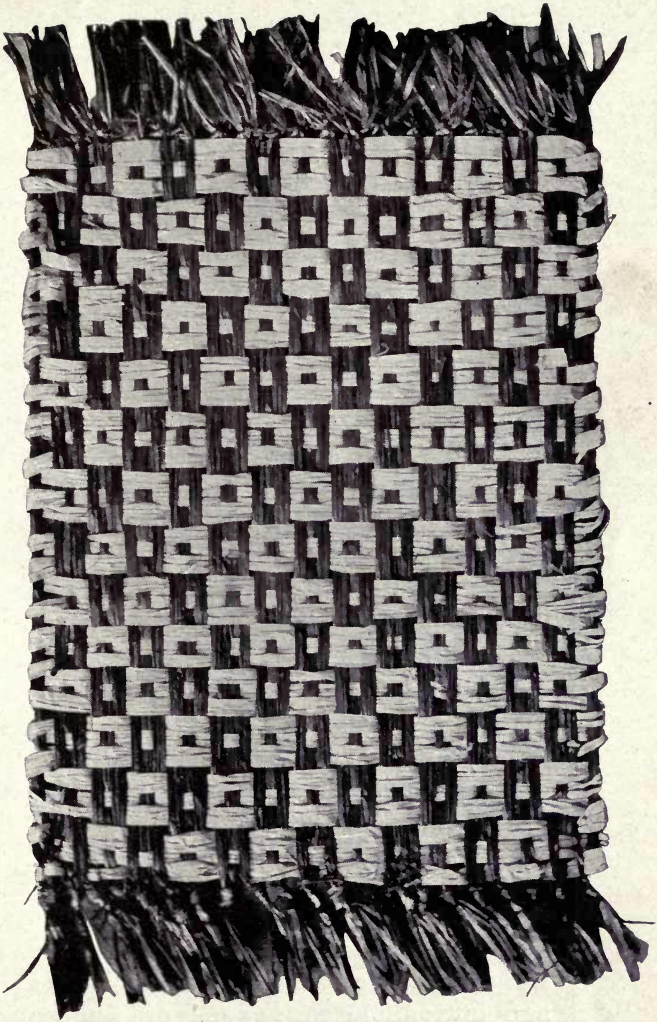
RAFFIA MATS

Method of making raffia mats

MATS of raffia are made like all the other mats. The warp may be of twine or carpet warp. In this case, the mat should be woven of raffia in the natural color, with stripes of bright color at each end; or it may be of some dark tone with stripes of a contrasting color. By using a warp of raffia, many of the beautiful kindergarten designs can be produced. Use one color for the warp and another for the woof. The children will have no difficulty in carrying out the pattern, if they remember that the *rods* correspond to the *border* of the paper mat. Before stringing the warp for a kindergarten pattern, count the strips in the paper mat and begin to count on the loom *from* the rods. In this kind of work the string on top of the rod does not count. It forms the *border* of the mat.

The rods and the warp strings in kindergarten patterns

In making mats, or matting, of raffia, the material can be carried over the rods as in wool-weaving, or it can be finished on the edges in the same way as the real matting



A woven mat of raffia, from a kindergarten pattern in green and the natural color of the raffia

Stringing the warp

is done. This will be easily understood by examining a piece of matting. In stringing the warp, have three strings over each bar instead of one. Cut the woof strips several inches longer than the width of the loom. Weave the first strip, leaving a piece at each side. Thread a tape needle with one end and weave it in and out the three warp threads on the rod. Then cut it off close to the edge. Finish off all the ends in this way. When the work is removed from the loom, press the edges flat with a warm iron. It is a little easier to keep the pattern right by weaving in this way, and the work resembles the real matting more nearly. Use a tape needle for weaving raffia. If desired the edge of raffia mats can be strengthened by binding with narrow tape.

Porch curtains

If the doll house which we are fitting is a large one with porches, one could complete the furnishings with a porch curtain for sunny afternoons.

Boxes of all kinds can be made of raffia woven in panels. It will make the box stronger and firmer to overhand a piece of rattan around the edges of the panels before joining them in the form of a box. Thread a worsted needle with a narrow strip of raffia and buttonhole the edges of the panels

together; or, sew them over and over and cover with a braid of raffia. Spiral-weaving is pretty for this finishing. It is described in an article entitled "Straw-Weaving," in "American Homes" for September, 1900, a magazine published in Knoxville, Tenn. Glove, trinket, and mouchoir boxes are pretty for holiday gifts. By using different patterns and colors a great variety of them can be made.

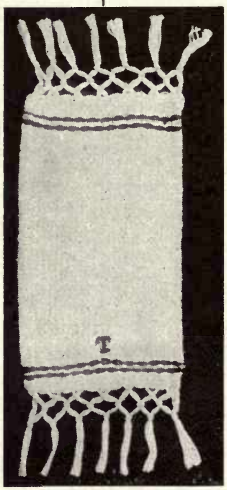
Glove, trinket, and mouchoir boxes

Chapter Eleven

MISCELLANEOUS WEAVING

Doll towels

DOLL towels are very fascinating things to make. Adjust the loom for the required size. The exact proportion can be ascertained from a large towel. String the close warp with fine darning cotton and have the strings in pairs with fringe at each end. Allow several inches for fringe so that it can be knotted easily. The woof threads, which are also of fine darning cotton, should be pushed very closely and smoothly together. Plain stripes of red or blue, or fancy stripes made with a kindergaten design, can be woven. Observe the same directions for spacing the stripes which are given with the silkoline rug. The towel in the illustration is made of white darning cotton, with the stripes and initial of red. The children will be delighted to lay towel borders with their tablets, and after cutting and pasting with



A doll towel with fringed ends

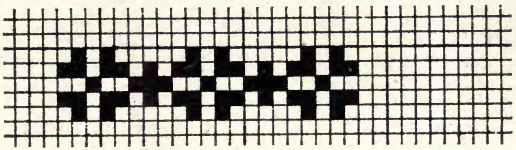
colored paper, weave them in towels for Miss Dolly's housekeeping. Cross-stitch the initial as previously directed. Lunch cloths and bedspreads can be made in the same way. These should be fringed all around. A cross-barred cloth or spread can be made by putting the color in the warp at regular intervals and weaving across with color and white to form squares. Pretty quilts of coarse cotton can be made with kindergarten designs. By weaving many squares, a large quilt can be made.

Patterns for towel borders

Lunch cloths

Bed-spreads

Quilts



Border for blankets, etc.

Bed and carriage blankets are best made of single zephyr, although Germantown wool will do. The heavy carpet wools are also pretty. Some suggestions for this work have already been given under the head of "Materials." These blankets are really mats, but made only for another use, and are to be woven in a similar way. Those with centers and borders are pretty, and the plaid blankets are always attractive.

Bed and carriage blankets

For doll shawls choose a pretty Scotch

Doll shawls

plaid and match the colors in fine wool. String a close warp with wool, copying the Scotch plaid exactly. Weave the colors across so that a "truly" plaid shawl may grace Miss Dolly's shoulders on the cold winter mornings. A striped shawl is pretty, or one having one color for the center and another for the border.

Doll skirt

Miss Dolly may have a lovely petticoat, too. String a continuous warp long enough for the width of the skirt. Adjust the rods for the length. By using a little color in the warp near the right edge of the weaving, the skirt will have some stripes. Twist a cord of the wool and run in the top for a draw-string.

Reins

To make reins, adjust for a narrow strip and string a close, continuous warp the length desired. Make a piece, also, to go across the front. Use Germantown knitting yarn. A black warp with a bright red woof is pretty.

A square Tam O'Shanter

In order to obtain a Tam O'Shanter for Dolly, first weave a square the required size. String a close warp with wool and weave a kindergarten pattern with two colors. When completed, remove from the loom, fold four corners to the center, turn them in to form an opening for the head, and fasten

the edges by sewing, or by lacing with a cord made of the two colors. Fasten a tassel on the top and it is finished. Angora wool is pretty for these caps.

Fringe

The head piece of the loom should be adjusted for the width of the rug for which the fringe is required. A rug nine inches wide would require fringe nine inches long. Adjust the rods one inch apart. String

Fringe for a rug in red and black

the warp in every groove, one string over each rod and three between, making five in all. Weave over and under one until the heading is finished. If you have an extra side rod, place it in the sixth perforation from the right-hand rod. This will make tassels a little over two inches long. If a shorter fringe is preferred, adjust accordingly. If you have not an extra side rod remove the *left* one and place as directed, leaving the *right* one in the heading until the whole fringe is finished. Thread a large tape needle with two pieces of worsted, as

Threading the needle

long as the two can be conveniently managed. If the fringe is made of two colors, take one of each for the tassels, weaving the heading with the one which predominates in the rug. Run the ends in the grooves to fasten them. Wind under the right rod, which was left in the heading, through the first stitch, which includes the warp string over the rod, then over the extra rod to the right. Wind under again through the next stitch in the heading (always around the rod) and so on until the end is reached. To

Making the fringe into tassels

make this fringe into tassels, separate six strands of each color and tie with the two colors, running the tape needle and worsted along from one tassel to another, or tie each one securely and cut. The fringe will need no finishing at the ends. Run the short ends, which were wound through the grooves in the beginning in order to fasten them, through a few stitches in the heading. The fringe can be made of one color, and of any

Removing the fringe from the loom

width. To take the fringe from the loom, first remove the rod at the end of the tassels and cut the fringe before removing the rods from the heading. This will insure straight cutting at the ends of the tassels. If one prefers a knotted fringe, cut and knot before removing the heading. By examining rug

fringes in the furniture stores one can get a very good idea of the manner of knotting. (See also directions for splicing Germantown wool.)

Knotting

A simple fringe can be knotted quickly and easily in the ends of the warp strings, after the rug is taken from the loom. First decide upon the length of the fringe when finished. Add at least two inches to allow for knotting. Cut each piece of wool twice this length, double, and thread a tape needle. Pass the needle from the right side of the rug to the wrong, through the warp strings at the end of the rug. Draw the loop of wool through and unthread the needle. Pass the two ends of the wool down through the loop and draw it tight. When this has been done in every pair of warp strings, knot every other piece of the fringe together, in the same way that towel fringe is made.

This question of whether a rug should have fringe or not is much discussed at present. It is largely a personal one. The best way, perhaps, is to study different kinds of rugs and know which ones are usually made with fringe and which are not.

Bed shoes, or socks

Bed shoes of all sizes are easily woven, and make a useful holiday gift. They are made without soles and are intended to be

Bed shoes

drawn up around the ankle like a high moccasin. Use the soft double Germantown wool. White, fastened together with pink or blue, or white striped with a color, may be used very effectively. The socks in the illustration are of white wool with a pink seam up the instep and pink scallops around the top. One sock is shown on a last, and the other as it appears off the foot. The stripes in the knitting can be shown in the weaving by using a color. The full size of the loom makes a shoe of medium size. String a close warp with white wool. If the shoe is to be all white, weave with the same, leaving the color for the finishing. If it is to be striped, weave perhaps eight or ten times across with color and then with white; when the weaving is finished you will have a mat 9 x 12 inches. Double one of the short edges and sew over and over on the wrong side with white wool. This is the toe. The two long edges now lie together. They may be crocheted, or knitted, with colored wool by holding them close and fulling in, or by

Bed shoes made of white wool

puckering a little. If this is done in color, it makes a pretty seam on the top of the foot and in front of the ankle. The top may be finished by crocheting a beading and scallops of the colored wool. Run a ribbon or worsted cord through the beading. If desired, the long edges may be laced together with ribbon one-half inch wide. Baby shoes are made in the same way. To ascertain what length to adjust the loom, measure the sole, then up, back of the heel, to a point above the ankle. For the width, measure around the foot. Finish the cords with tassels or balls.

Baby shoes

To make worsted balls, first cut two small circles from cardboard. From the center of each cut a smaller circle. Hold one circle over the other, and with a worsted or tape needle threaded with wool, wind over and over very closely until the hole in the center is completely filled. Always piece the wool on the *outside* edge. Cut the wool all around on the outside. Make a cord of the wool and slip *between* the two circles. Then tie so as to fasten all the pieces of wool in the middle, leaving the cord long enough to tie in a bow if desired. Tear the pasteboards, remove them, and trim the wool evenly. A second ball should be fastened on the other

Worsted balls for bed shoes, and other articles

end of the cord, *after* it has been laced through the beading.

Photograph frames

To weave photograph and picture frames of silk, chenille, raffia, celluloid, or leather, proceed in the same way as for a bordered rug, having the oblong or square center the required size for the picture. Foundation frames for mounting the work can be purchased, usually, at the stores where tissue paper and flowers are sold.

Table mats

Square and oblong table mats for hot dishes can be made of candle-wicking, knitting cotton, or cheese cloth.

Tippet or scarf

To-day, tippets and scarfs are very little used, but they are very comfortable things to wear to school on a cold day. In order to make them, string a continuous warp of the required length with Germantown dark colored wool. Weave the same color for the woof, and brighten it at intervals with Roman stripes. A plaid scarf can be woven, if preferred; while with a close warp one can have a kindergarten pattern in another, or contrasting color.

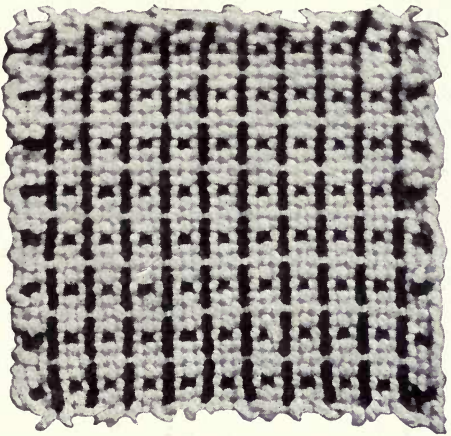
Wristlets

In making wristlets, one must decide how long they are to be, and adjust the length on the loom. Measure around the wrist for the width, remembering that the wristlets will stretch when pulled over the hand.

Weave in stripes or plaid, or, if desired, plain, stringing the warp with the same wool as is used in weaving. Remove the mat and sew the edges together.

Sleeve protectors

Sleeve protectors can be woven of raffia in the same way as wristlets. Make them



A square of silk canvas woven with silk rope-tine and chenille in warp and woof

so they can be fastened on the outside of the sleeve like a cuff.

Purses, or chatelaine bags

Purses, or chatelaine bags, are made of knitting silk. Beads can be added, if desired. Adjust the loom for the required size, and string a continuous warp, if necessary. Silver or nickel tops which open and close may be obtained at department stores.

Shopping and-school bags

It will be better to use heavier material for shopping and school bags. Raffia makes a strong bag; silk strips are serviceable, and leather strips are good for school bags.

Opera-glass bags

For opera-glass bags, make two mats and lace or weave them together, or string a continuous warp. Use rope silk, chenille, or knitting silk with beads.

When one has mastered the mysteries of weaving thoroughly enough to make a *good* mat, it is very easy to "turn them into" various articles. There is no slight of hand about it.

Panels of silk canvas for boxes

Silk canvas panels are made by adjusting the loom for the required size of the sides of the box, and weaving a plain mat for the top. A number of suggestions have been given under the head of "Materials."

Pretty neckties of fine knitting silk can be made on the loom by using a continuous warp of the same material.

The illustration on page 117, and another on page 115, and also the vignette on the title page, show squares of silk canvas, and will give one many ideas of how they may be used. One has a cross-stitched pattern of chenille, and in another the chenille was alternated with silk in the warp, and both chenille and silk were used in

the woof. The squares can be made up in cushion and box covers, sachet cases, sofa pillows, or the largest squares can be

Sofa pillows, cushions, sachet cases, and veil cases

A square of silk canvas with cross-stitched pattern of chenille

used for veil cases. A number of them can be joined for large sofa pillows. In the latter case they can be made of wool, and many of them could be crocheted together for an afghan or slumber robe.

Slumber robes or afghans have been previously mentioned under the head of "Materials." It will be found very easy, after a little experience with a continuous warp, to make strips of any length. It is better to wind the extra lengths of warp upon spools,

Slumber robes or afghans

Portières

as has been suggested, or around the tops of the rods. Large portières can be made of long strips of silk or silkoline cut bias. Fasten the long strips together horizontally in imitation of Bagdad curtains.

Hair receivers

Hair receivers are easily made from raffia. Make a square mat and fold it in cornucopia form.

Chapter Twelve

ORIENTAL RUGS

Rugs and draperies

TO be quite up to date, Miss Dolly should have oriental rugs and draperies in her house beautiful. These are easily made on the loom, and the little girl or boy, who has first copied a pattern and then seen it grow under patient fingers, has a thing of beauty and a joy forever. What could give more pleasure than to be able to say fifty years from now: "I wove that, my dear, when I went to school"? Truly the grandchildren would reply: "How I wish I could have gone to grandma's school!"—only they may have something equally beautiful which will take its place in that far-off time—who knows?

Patterns

The patterns for oriental rugs familiar in the East have descended through hundreds of years, and the exquisite colors, produced by vegetable dyes, and increasing in richness and beauty with age, are only to be seen in old rugs. We have nothing in our modern dyes to compare with the old colors. One is soon interested in the study of these

Oriental colors

Eastern treasures, and it becomes second nature in a short time not only to chat familiarly of Kermans, Serebends, Khivas, Bokharas, and Kiz-Kilims, *ad infinitum*, but to jot down now and then in one's notebook, or still better in one's design book (made of the kindergarten squared paper, one-eighth inch), a pretty border or centerpiece for the rug which is to grace some doll house. The patterns of Turkish rugs (see page 122) are of geometrical or arabesque designs—an edict from the Koran having prohibited the reproduction of living things. The Persians, however, weave animals, birds, etc., as their ancestors did in days gone by.

Inscriptions on Persian rugs

There is some very interesting reading in "Oriental Rug Weaving," by V. Kurdji, on the subject of inscriptions often found on Persian rugs. He says: "If the possessors of some of the rare pieces that are sold in this country knew the meaning of the inscriptions woven in their rugs, the knowledge would add a charm and interest which would make them more valuable than the harmonious colors so beautifully blended."

Bokhara rugs

Oriental rugs take their names from the countries or provinces in which they are made. Bokhara rugs are made in mountainous districts of Turkestan, and have

never been successfully imitated, because the dyes used are made from a plant grown only in that district. The designs are geometrical, and the colors deep maroon or blue. The pile is woven as close as velvet. They are noted for the superior quality of their dyes. Khiva rugs, sometimes called Afghan, are made in Turkestan. They resemble the Bokhara rugs, but are coarser in texture and heavier in pile, and they differ from them in having a wide selvage at each end. Some Khivas have a small pattern in red mosaic over the surface with a circle in the center. One often sees a rug made of a rich golden yellow with a background of dark red.

Khiva rugs

The Kiz-Kilim rugs have no nap, and are woven with a needle. They are thin and almost alike on both sides. The larger sizes are woven in two strips fastened together so that they can be taken apart and used for curtains. "These Kiz-Kilims are woven by Armenians and Turks in Anatolia (the land of sunrise, and the Greek name for Asia Minor). The literal translation of the word Kiz-Kilim is bride's rug, it being a custom in that country for a bride to present to her husband one of these rugs, which she has woven during her engagement to him. The

Kiz-Kilim rugs

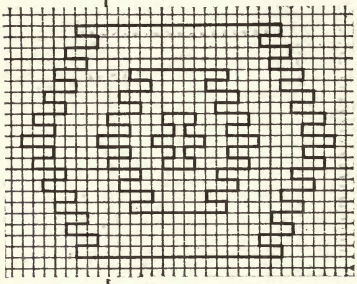
A Kiz-Kulim rug

Kiz-Kilim rugs

quality of the rug is supposed to measure the quality of the husband's affection for his bride, consequently we have many beautiful specimens of this class, the brilliant hues and intricate designs of which could only have been inspired by the whisperings of Cupid. They are in open-work patterns—called perforated—and often have long tufts of colored silk tied to the rugs with blue beads, in order to keep them from the effects of the Evil Eye." The Kiz-Kilim rug in the illustration was copied from a genuine rug. The filling is a deep blue and the borders are in oriental colors. The center figure is white, with red, brown, and yellow inside. There are four kinds of Kilims. Much interesting and valuable information can be found in John Kimberley Mumford's "Oriental Rugs" (New York: Charles Scribner's Sons, 1900), where directions for weaving Kiz-Kilims, Khivas, and Bokharas are given, with a few patterns.

Double warp for Turkish rugs, etc., with fringe

Kiz-Kilim rugs have perforated or open-work patterns. To produce this effect string a *double* warp through every notch in the foot and head pieces; that is, use two strings in each notch, tying in pairs for fringe as before. Use a brownish white carpet thread. With strong black thread string through every



A Kiz-Kilim rug pattern

other notch to outline perpendicular sides of squares in the pattern. Your warp will be strung one-quarter inch, but the black threads will be one-half inch. This will enable you to keep the patterns straight as the work progresses. (See page 132.)

Turkish patterns laid with tablets

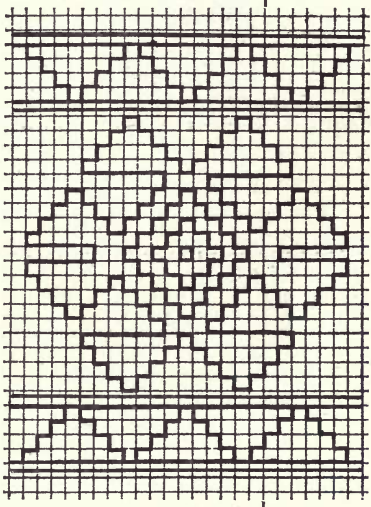
The children can lay these Turkish patterns with square tablets upon their desks, the pattern being drawn upon the board, or on paper with a rubber pen. It will be a delight to the children to transfer them to paper by drawing and then coloring, or by cutting and pasting colored papers.

Materials used

Navajo yarns are used for these rugs. Copy your figures and colors from genuine rugs. The accompanying patterns were obtained in this way. See directions on page 45 for stringing a double warp with fringe at each end. First fasten the pattern under the warp; then weave about one-quarter inch at each end with carpet thread like the warp. This will make it look like a "truly" Kiz-Kilim. Next to this, weave a very narrow strip of several colors each twice across, regarding the double strings as one. Then

Perforations

weave each part of the narrow border. To make the perforations, take up one thread of the double warp for one side of the pattern, and the other thread for weaving the pattern next to it. For instance, the "steps," as the children call them, of triangle No. 1, when finished, will stand close to the steps of triangle No. 2, with a little slit between. These perforations occur only where one pattern joins another of a different color, or the dark filling. For instance, in the white figure in the center, where three or five squares come together, the slits occur at each end, the part between being woven over the double strings as if they were only one. In this way the perforations of other parts are closed top and bottom. Use a blunt steel weaving needle and weave each section of the pattern separately. Weave the filling last. Some weavers prefer to weave pattern and filling at the same time, using two or more needles.



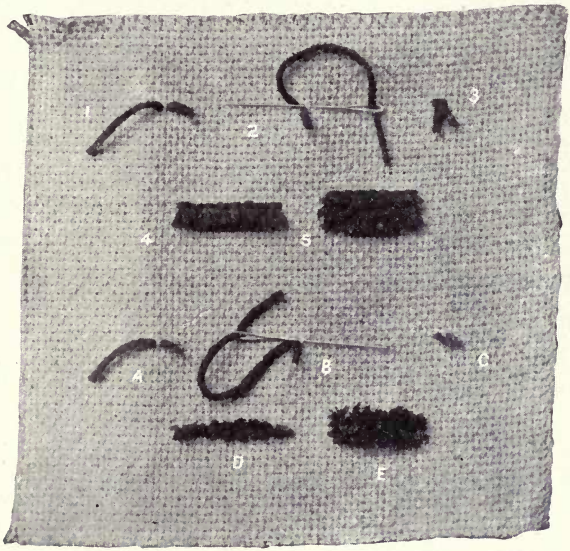
Pattern for a Turkish rug

Take care not to draw any part of the pattern too tight, or the perforations will be too large. The right and left edges of the rug are woven over the rods to keep them straight. Both narrow borders were woven before the center was commenced.

Stitches for Khiva and Bokhara rugs

The genuine Khiva and Bokhara rugs are made by weaving and knotting alternately. It will be easier at first to weave a web, or foundation. Choose a tight twisted yarn about the color of the rug to be woven. String a close warp of the wool and weave plain up and down, one string at a time, until you have a rug of the desired size. Put in the pattern first, and then the filling. This work will be almost too difficult for *little* children. Carpet wools and Germantown wool can be used. It will not be found difficult to follow the pattern, especially if one is used to cross-stitch embroidery. Each stitch counts for one of cross-stitch. Keep the stitches very close together so that the nap will stand up well when finished. Silk rugs can be copied in the same way, using floss or rope silk for the pile. If one prefers, a piece of burlap may be stretched across the loom and secured to the rods, instead of weaving a foundation, as suggested.

Stitches for pile weaving are very easily made. This illustration showing examples of stitches for pile weaving illustrates the methods used in the stitches, and may be used for Axminster or Wilton rugs, for boxes,



Stitches for pile weaving

sachet cases, and other articles. These stitches are made with the blunt steel weaving needle mentioned in Chapter V.

There are two stitches, each occupying half of the illustration and numbered from left to right, beginning at the top. Make No. 1 by passing a tape needle threaded with

The first stitch

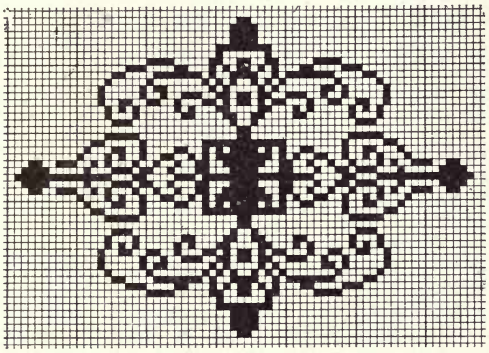
wool down through the web, leaving a short end, then up one stitch to the left. This is the first step. In No. 2 continue over on the right side, *past* the stitch where you started, to the stitch on the right; then down and up through the first hole, and cut off the wool the same length as the end you left at first. No. 3 shows a stitch completed. No. 4, one row of stitches, and No. 5, three rows, showing how one row overlaps another. When the rug is finished, the ends should be cut evenly, so that the nap is like velvet. The children would say that this stitch looks like a two-legged stool, and so it does.

The second stitch

The second stitch is made so that the nap lies sideways from left to right. *A* is just like the preceding stitch. *B* shows the needle passing down the stitch where you started and up one stitch to the right. Cut off the wool and pull the end left at first over the last one. This pile should stand very straight and even. *C* shows a completed stitch; *D* one row, and *E* three rows. These stitches are useful in mending Khiva and Bokhara rugs.

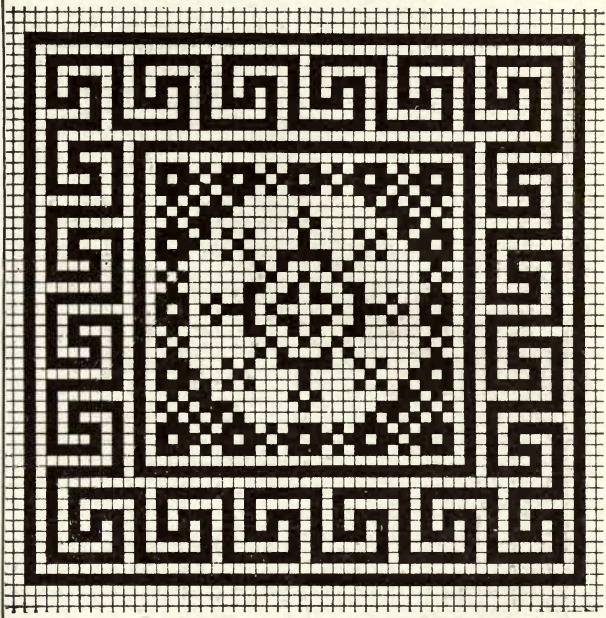
Wilton, Axminster, or any rugs having a pile, can be woven with the same stitches. The patterns shown on pages 130 and 131 may be used for either a Wilton or Axminster rug, for a box cover, cushion, sachet case,

or mat; and can be cross-stitched embroidery, on burlap, silk or woolen canvas.

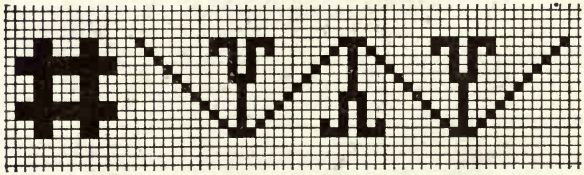


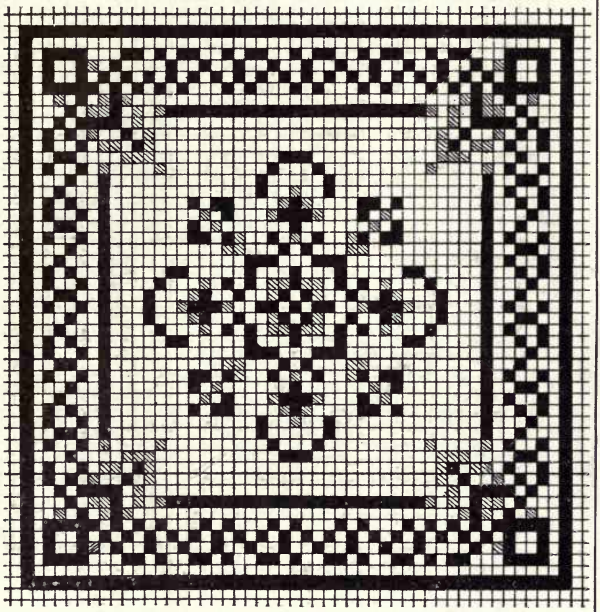
Wilton and Axminster rugs

Pattern for rugs or squares

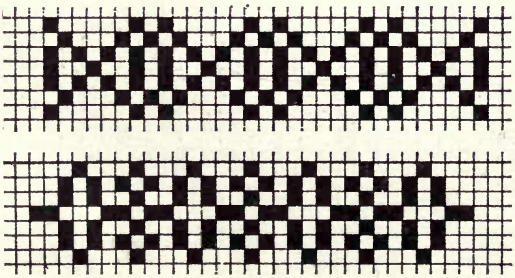


Pattern for border of Persian rug

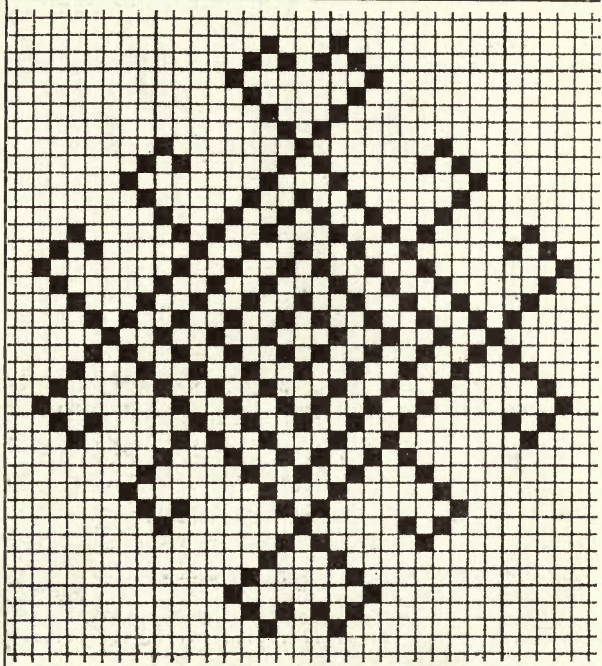




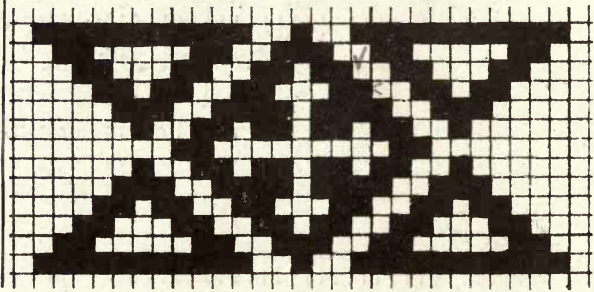
A pattern for a rug or square



Borders for rugs or squares



A Kiz-Kilim rug pattern



Pattern for a Kiz-Kilim stripe

Chapter Thirteen

NAVAJO BLANKETS

NAVAJO blankets were first made by the Pueblo Indians, from whom the Navajo Indians learned the art, and not long after the latter excelled in the making of them. Among the Pueblo Indians the men do the work; but women are the weavers among the Navajos. In the illustration on this page is seen a miniature Navajo loom with the blanket commenced. The two cords woven at the sides with the woof can be easily seen. Simple looms are suspended between two posts or trees, and the weaver sits upon the ground. A twig is used for a shuttle, and a reed, fork-shaped

A sketch

A miniature Indian loom

like a hand, is used to push down the woof threads. The blanket is made waterproof by pounding down the threads with a batten, a good picture of which is seen in Dr. Washington Matthews' article on Navajo weavers in the Third Annual Report of the Bureau of Ethnology. Separate balls of color are used to carry out the pattern, which is sometimes traced in the sand before the work is commenced. As many as twenty-nine different balls have been seen hanging from a single blanket. Some of the designs have been handed down from one generation to another, and are carried entirely in the memory. They are often symbolical "and unfold a whole legend to the knowing eye of the native." The weaving is done from the bottom up, some working in one direction, while others weave first at the bottom, then turn the loom upside down, and, after weaving about the same distance there, finish in the middle. The last part of the weaving is like darning, and is often done with a needle. The colors most used are white, gray, black, a bright yellow, red (a scarlet, generally obtained by raveling bayeta cloth), and sometimes blue. In former times, when the Indians used vegetable dyes, the colors

Indian weaving

The colors used

A Navajo Indian woman weaving a blanket

Old Indian blankets are rare

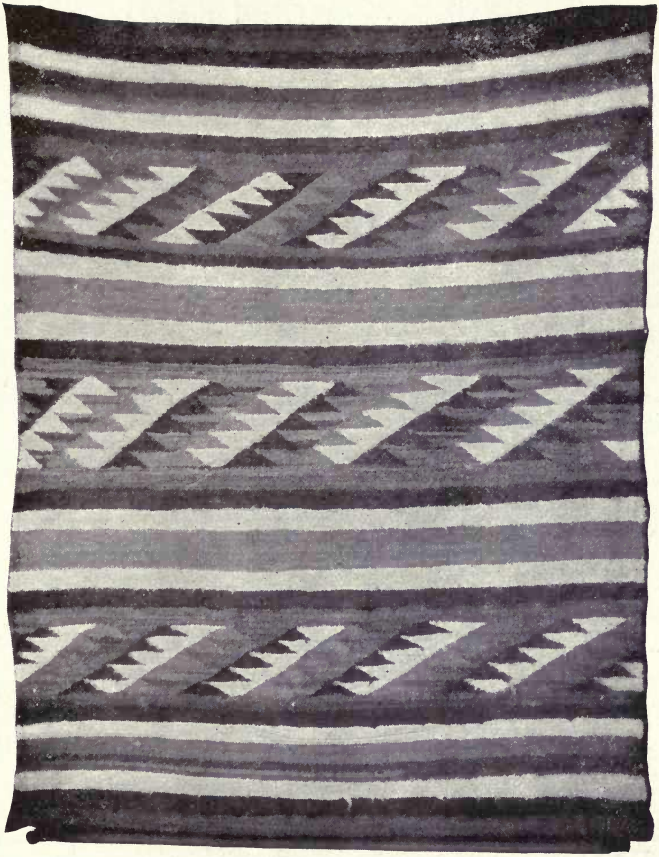
were beautiful and lasting. These old blankets are becoming more and more rare, and to-day in their places we have the bright and not always satisfactory results of aniline dyes. The blanket in the illustration facing this page has narrow stripes in the following colors: On each end (seven stripes) red, black, white, orange, green, white, black.

Description of the illustration

The two groups of six stripes in the middle are: Black, white, red, green, white, black. Before the advent of the present squaw dress, the black, red, and dark blue blankets were used as clothing, but the best blankets were, and still are, worn at sacred dances. Dr. Matthews, in his report, gives an interesting description of the method of making these blankets, with several pictures of the better examples. Navajo blankets are finished with four border cords, secured as the weaving progresses, the ends fastened at the four corners by small tassels.

Method of making

Small Navajo blankets can be woven on the loom. Draw the pattern and place under the warp, fastening it to the side rods, or to a small strip of weaving at each end of the loom. Use warp or carpet thread for the warp, and weave with a tape or upholstery needle. Weave all the pattern first, and then put in the filling, or weave as



A Navajo blanket

Indian blankets

the Indians do, filling in from one part of the pattern to the other by threading the needle with a different color. This can be done, without running the thread underneath, by hooking it in the loop of the pattern just finished. These little blankets are very fascinating things to make, and the children become much interested in them, and in Indian life as well.

The colors in the blanket on page 141

This very beautiful Navajo blanket, shown in the illustration, has three broad red stripes, two narrow red stripes about one-half the width of the former, and four gray stripes about one-half the width of narrow red stripes. The centers of all the figures are red, like the filling—a brilliant scarlet. The colors of the large figures, beginning at the center of each, and counting from left to right, are as follows: Nos. 1, 3, and 5, red, green, and light yellow. Nos. 2 and 4, red, white, and black. The small figures, counting the same way, are: Nos. 1, 3, and 5, red, white, and black. Nos. 2 and 4, red, yellow, and green. The four corners are finished with twisted red cord-like tassels. This cord also extends across the warp ends. Dr. Matthews tells in his article on "Navajo Weavers" how two cords are twisted and woven at the sides with the woof.

The two Navajo Indian blankets illustrated in this chapter, and the pattern shown on the following page, may be easily

A very beautiful Navajo Indian blanket, showing the manner of decoration

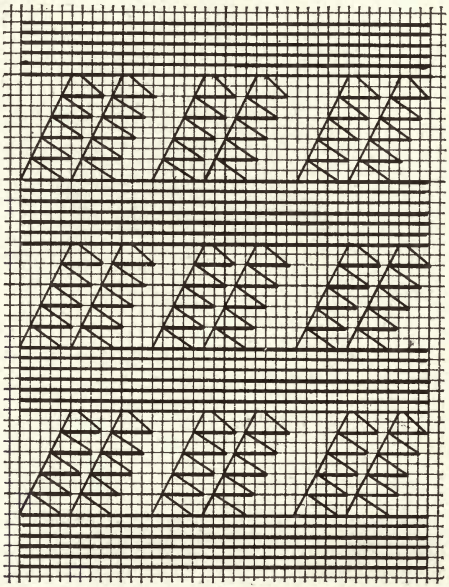
adapted for the hand loom. Use the Navajo yarn spoken of in Chapter XII. Some of the handsomest Navajo blankets have a long nap.

Navajo yarn

Navajo patterns laid with tablets

The children will take pleasure in laying Navajo patterns with triangular tablets,

A pattern for a Navajo blanket



and then transferring the pattern to paper by drawing and coloring, or by cutting and pasting in colors.

Chapter Fourteen

SONGS, GAMES, AND STORIES

THERE are many beautiful songs which can be sung during the weaving. Thomas Carlyle has said:

"Give us, O give us the man who sings at his work! He will do more in the same time; he will do it better; he will persevere longer. One is scarcely sensible of fatigue whilst he marches to music, and the very stars are said to make harmony as they revolve in their spheres."

Songs and games lighten work

There are songs about the birds' nests, always pleasing to the little folks, and doubly so when they have held in their own hands the wonderful bit of weaving, so strong and yet so soft, woven by the mother-bird for the baby-birds. Mrs. Spider is also very interesting with her lace-like webs which are to be found even in well-regulated schoolrooms, and the songs of the bleating sheep who give us their wool fill every little heart with delight. Miss Poulsson's Finger Play, "The Lambs," gives the restless fingers something to do and the

Songs for the children

"eight white sheep all fast asleep" afford a chance for a good laugh over the "two old dogs close by" (the thumbs). One has the opportunity, too, of noticing whether the eight white sheep on the tiny hands are really *white* enough to do the weaving. A smiling allusion to some small *black* sheep will bring them back clean for the next session.

A weaving game

The following weaving game can be played in several ways. This extract is from the "Kindergarten Guide," by Lois Bates: "Six children stand in a row; a tall one at each end for the border of the mat and the other four representing the strips. The child who is to be the weaver holds one end of a long tape, while the other is fastened to the left shoulder of the first child. The weaver weaves the tape in and out among the children, placing the second row lower down. It will be easily seen that the children who had it passed in *front* of them in the first row, had it *behind* them in the second, and vice versa."

The following weaving song in the Walker and Jenks book can be sung during the weaving. To be sure it is not really "over and under" when you think of them as *children.* Remember that they represent

a mat, and they are for the time the strips and border.

(*Sung to the tune of "Nellie Bly."*)

Over one, under one,
Over one again.
Under one, over one,
Then we do the same.
Hi, weavers! Ho, weavers!
Come and weave with me!
You'll rarely find, go where you will,
A happier band than we!

Kate Douglas Wiggin (Mrs. Riggs) in her "Republic of Childhood" describes the game in this way:

Explanation of the game

"First choose a row of children for threads of the warp, standing at such a distance from each other that a child may pass easily between them. Second, choose a child, or children, for thread of woof. After passing through the warp, each child takes his place at the end and other children are chosen." In this way more children can take part than if a tape were used. Some teachers play it in a different way, using the desks with the seats turned up for the warp and the whole number of children for the woof, winding in and out all over the room. This is very delightful, indeed, if there is enough space for the children to pass easily without tripping on the iron supports of the desks.

This is a good game for a rainy day, when there is no outdoor recess.

Bird games

The bird games are beautiful and leave a wholesome impression of home life and home love on the children, which will have a lasting influence. Few children, brought up in this tender and beautiful way, will ever feel an inclination to harm the birds, or indeed any animal.

Interesting stories

The fund of stories of birds and birds' nests is almost inexhaustible. Miss Poulsson's "In the Child's World" contains many stories of the weaver (pages 407–412), and several about birds and birds' nests (pages 292–301). Her talks to teachers with regard to the presentation of each subject are very helpful, as well as her suggestions for the teachers' reading. Stories of the weaving birds, particularly the African weaver, are interesting. It is said that two birds work together, one on the inside of the nest and the other on the outside, passing the grass and twigs in and out, until the home is completed. The children will enjoy, too, stories of weaving in other lands, material for which can be easily obtained. In fact, no one need to be without stories in these days of books and magazines.

Last, but not least, is the conversation

during the weaving. Anyone who has attended a teachers' meeting, where the industrial work was being given, has not failed to remark the sociability all over the room. "How are you getting on?" "Let me see yours." "Oh, I cannot get it at all," etc., etc., are heard everywhere, and yet those same teachers go into their class rooms the next day and expect the children to work without whispering. If they will read what Mrs. Wiggin says in the "Republic of Childhood," in her talk on "Sewing," they will never be guilty of it again. A good plan is to have the room perfectly quiet while a dictation is being given, and then allow a period of relaxation when the little folks can compare and admire the work to their hearts' content. Beware of too much repression. A child when asked why a tree grew crooked, replied: "Somebody stepped on it, I suppose, when it was a little fellow." The answer is painfully suggestive. Mrs. Wiggin truly says: "If the children are never to speak except when they answer questions, how are we to know aught of their inner life?"

Conversation

Never repress the children

The following list of songs, games, and stories suggests interesting material to correlate with the work in hand-loom weaving.

Songs and Games

SONGS AND GAMES

ATKINSON, FRANK H., JR. Singing Songs for Children. See COONLEY.

BEEBE, KATHERINE. Schoolroom Plays. *Chicago: Thomas Charles Co.* 25 cents.

A Weaving Game.

BROWN, KATE L. Stories in Song. See EMERSON.

COOLIDGE, ELIZABETH. After Supper Songs. *Chicago: Herbert S. Stone & Co.* $2.00.

COONLEY, LYDIA A.; SMITH, ELEANOR; GAYNOR, JESSIE L.; ROOT, FREDERICK W.; and ATKINSON, FRANK H., JR. Singing Verses for Children. *New York: The Macmillan Co.* $2.00.

DAVIS, KATHERINE WALLACE. Singing Rhymes and Games. *Chicago: Clayton T. Summy Co.* 35 cents.

EMERSON, ELIZABETH U., and BROWN, KATE L. Stories in Song. *Boston: Oliver Ditson Co.* $1.00.

The Oriole's Nest.

FORSYTHE, CLARENCE. Old Songs for Young America. *New York: Doubleday, Page & Co.* 1901. $2.00.

Needle's Eye.

GAYNOR, JESSIE L. Songs of the Child World. *New York: The John Church Co.* $1.00.

The Bird's Nest.
The Happy Lambkins.
Song of the Shearers.
Spinning the Yarn.
Grandma's Knitting Song.
Weaving Song.

GAYNOR, JESSIE L. See also COONLEY.

Songs and Games

HILL, PATTY S. Song Stories for the Kindergarten. *Chicago: Clayton T. Summy Co.* $1.00.

The Children and the Sheep.

HOFER, MARI RUEF. Children's Singing Games. *Chicago: Published by Mari Ruef Hofer, Kindergarten Magazine Co.* 50 cents.

HUBBARD, CLARA BEESON. Merry Songs and Games. *St. Louis: Balmer & Weber Music Co.* $2.00.

JENKS, HARRIET S. Songs and Games for Little Ones. See WALKER.

NEIDLINGER, W. H. Small Songs for Small Singers. *New York: G. Schirmer.* $1.00.

The Spider.
The Bee.
The Rainy Day.

NURSERY STORIES and Rhymes for the Kindergarten and Home. *Springfield, Mass.: Milton Bradley Co.* $1.00.

The Song of a Baby's Blanket.
The Song of a Baby's Shirt.

PRATT, WALDO S. St. Nicholas Songs. *New York: The Century Co.* $2.00.

ROOT, FREDERICK W. Singing Songs for Children. See COONLEY.

SMITH, ELEANOR. First Book in Vocal Music. *Chicago and New York: Silver, Burdette & Co.* 30 cents.

Oriole's Nest Song.
Spinning Song.

Songs and Games

SMITH, ELEANOR. A Primer of Vocal Music. *Chicago and New York: Silver, Burdette & Co.* 25 cents.

The Lazy Sheep.
The Spider.
The Silkworm.

—— See also COONLEY.

SONGS IN SEASON. Plan Book. *Chicago: A. Flanagan.* 50 cents.

The Lambkin.

WALKER, GERTRUDE, and JENKS, HARRIET S. Songs and Games for Little Ones. *Boston: Oliver Ditson Co.* $1.50.

Birdies in the Green Wood.
Fly, Little Birds.
In the Branches of a Tree.
Eight White Sheep.
Weaving Song.

STORIES

Stories

ANDREWS, JANE. Each and All. *Boston: Ginn & Co.* 50 cents. *Boston: Lee & Shepard.* $1.00.

New Work for Pense.

CHASE, A., and CLOW, E. Stories of Industry. *Boston: Educational Publishing Co.* 2 vols. 60 cents each.

Stories of Cotton, Wool, Silk, and Carpets.

CLOW, E. Stories of Industry. See CHASE.

FARMER, LYDIA HOYT. Boy's Book of Famous Rulers. *New York: Thomas Y. Crowell & Co.* $1.50.

Robert Bruce and the Spider.

Stories

MILLER, OLIVE THORNE. Little Folks in Feathers and Fur, and Others in Neither. *New York: E. P. Dutton & Co.* $2.50.

The Spider Speaks for Herself.
Stories of Caterpillars and Butterflies.
A Funny Little Log House.

PIERSON, CLARA DILLINGHAM. Among the Farmyard People. *New York: E. P. Dutton & Co.* $1.25.

The Lamb with the Longest Tail.
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POULSSON, EMILIE. Nursery Finger Plays. *Boston: Lothrop Publishing Co.* $1.25.

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—— Child Stories and Rhymes. *Boston: Lothrop Publishing Co.* $1.25.

The Story of Baby's Blanket.

—— In the Child's World. *Springfield, Mass.: Milton Bradley Co.* $2.00.

Stories of Caterpillars and Butterflies.
A Visit to the Weaver.
John's Trousers.
How a Little Boy got a New Shirt.
Molly's Lamb.
Sequel to an Old Story.
Cotton Field Stories.
The Flax.
The Flax Flower.
The Silk Worm.
The Sparrow's Nest.
The Life of a Silk Worm.
The Goddess of the Silk Worm.
The Nest of Many Colors.
The Little Worm that was Glad to be Alive.

SMITH, NORA A. The Story Hour. See WIGGIN.

Stories

STORIES IN SEASON. Plan Book. *Chicago: A. Flanagan.* 35 cents.

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WILTSE, SARA A. Kindergarten Stories and Morning Talks. *Boston: Ginn & Co.* 75 cents.

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Chapter Fifteen

A LIST OF HELPFUL BOOKS AND MAGAZINE ARTICLES

BOOKS

ALBEE, MRS. HELEN R. Abnákee Rugs. *Boston: The Riverside Press. Issued by the author, Pequaket, Silver Lake P. O., N. H.*

—— Mountain Playmates. *Boston: Houghton, Mifflin & Co.*
(Chapter on Rug-making.)

ASHENHURST, THOMAS R. Designs in Textile Fabrics. *London: Cassell & Co.*

—— Weaving and Designing of Textile Fabrics. *London: Simpkin, Marshall & Co.*
(Chapters on History of Weaving, Color, and Combination and Arrangement of Designs.)

BATES, LOIS. Kindergarten Guide. *New York: Longmans, Green & Co.*

BENJAMIN, S. G. W. Persia and the Persians. *Boston: Houghton, Mifflin & Co.*

BIRDWOOD, SIR GEORGE. Industrial Arts of India. *London: Chapman & Hall.*

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DAVIE, OLIVER. Nests and Eggs of North American Birds. *Columbus, Ohio: The Landon Press.*

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FIRTH, ANNIE. Cane Basket Work. *London: L. Upcott Gill. 1899. New York: Charles Scribner's Sons.*

GRINNELL, GEORGE BIRD. Indians of To-day. *New York: D. Appleton & Co.*

—— Story of the Indian. *New York: D. Appleton & Co.*

GURDJI, V. Oriental Rug Weaving. *New York: F. Tennyson Neely Co.*

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HOLT, ROSA BELLE. Rugs: Oriental and Occidental. *Chicago: A. C. McClurg & Co.*

HOW TO MAKE and How to Mend. (Directions for dyeing.) *New York: The Macmillan Co.*

HUMMEL, PROF. The Dyeing of Textile Fabrics. *New York: Cassell & Co.*

JAMES, GEORGE WHARTON. Indian Basketry. *New York: Henry Malkan. 1902.*

KNAPP, ELIZABETH S. Raphia and Reed Weaving. *Springfield, Mass.: Milton Bradley Co.*

KRAUS-BOELTE, MME. Kindergarten Guide. (Occupations.) *New York: Steiger & Co.*

MASON, O. T. Woman's Share in Primitive Culture. *New York: D. Appleton & Co.*

MORRIS, WILLIAM. Some Hints on Pattern Designing. *New York: Longmans, Green & Co.*

MUMFORD, J. K. Oriental Rugs. *New York: Charles Scribner's Sons.*

SEEGMILLER, WILHELMINA. Primary Hand Work. *Boston, New York, Chicago, Dallas: Atkinson, Mentzer & Co.*

SHELDON, WILLIAM E., and others. Illustrated Lessons with Paper Folding. *Springfield, Mass.: Milton Bradley Co.*

TINSLEY, LAURA F. Practical and Artistic Basketry. *New York: Kellogg.*

WALKER, LOUISA. Varied Occupations in String Work; comprising Knotting, Netting, Looping, Plating, and Macremè. *New York: The Macmillan Co.*

—— Varied Occupations in Weaving. *New York: The Macmillan Co.*

WHEELER, MRS. CANDACE. Home Industries and Domestic Weavings. *New York: Associated Artists, 115 East 23d Street.*

WHITE, MARY. How to Make Baskets. *New York: Doubleday, Page & Co. 1902.*

WIEBE, EDWARD. Paradise of Childhood. *Springfield, Mass.: Milton Bradley Co.*

WIGGIN, KATE DOUGLAS (Mrs. George C. Riggs). Republic of Childhood (Occupations). *Boston: Houghton, Mifflin & Co.*

Fine art books

WORST, EDWARD F. Construction Work. *Chicago: A. W. Mumford. 1901.*

FINE ART BOOKS

The following books can be found in the Fine Art Collections in some public libraries. They contain beautiful illustrations of oriental rugs and carpets which are helpful in the study of design and of harmony in color :

BURTY, P. Masterpieces of Industrial Art.

COXON, HERBERT. Oriental Carpets.

LESSING, JULIUS. Ancient Oriental Carpet Patterns.

ROBINSON, VINCENT J. Eastern Carpets.

VIENNA IMPERIAL AND ROYAL AUSTRIAN MUSEUM. Oriental Carpets.

MAGAZINE ARTICLES

Magazine articles

A PROFITABLE PHILANTHROPY, by Mrs. Helen R. Albee. *Review of Reviews, July, 1900.*

ART OF THE AMERICAN INDIAN. *Chautauquan, March, 1899.*

A STUDY OF THE TEXTILE ART, by Wm. H. Holmes. *Sixth Annual Report, Bureau of Ethnology, Washington, D. C.* (pp. 84, 85.)

DOMESTIC ART NUMBER. *Pratt Institute Monthly, February, 1901.*

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HOME INDUSTRIES AND DOMESTIC MANUFACTURES, by Mrs. Candace Wheeler. *The Outlook, Oct. 14, 1899.*

INDUSTRIAL CLASSES IN SETTLEMENT WORK, by George W. R. Twose. *Pratt Institute Monthly, November, 1898.*

INDUSTRIAL EDUCATION AS A SOCIAL FORCE, by H. W. Stebbins. *Educational Review, May, 1902.*

JUVENILE PORTIERE MAKERS. *New York Tribune, New York City, March 10, 1901.* Reprinted in *Minneapolis Journal Junior, April 20, 1901, Minneapolis, Minn.*

LEAF CUTTING (for rug designs). *Pratt Institute Monthly, April, 1900.*

MRS. VOLK AND HER WORK. *Good Housekeeping, September, 1901.*

NAVAJO WEAVERS, by Dr. Washington Matthews. *Third Annual Report of Bureau of Ethnology, Washington, D. C.*
(Contains fine illustrations of blankets, etc.)

NEW ENGLAND RUGS. *Minneapolis Journal, Minneapolis, Minn., March 28, 1900.*

ON THE DESIGNING AND MAKING OF CARPETS, by F. J. Mayer. *The Artist, July and August, 1899.*

PREHISTORIC TEXTILE ART OF EASTERN UNITED STATES, by Wm. H. Holmes. *Thirteenth Annual Report of Bureau of Ethnology, Washington, D. C.* (pp. 91, 92.)

SOME SOCIAL ASPECTS OF EDUCATION, by G. Stanley Hall. *Educational Review, May, 1902.*

STRAW WEAVING. *American Homes, Knoxville, Tenn., September, 1900.*

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Teachers' College Record. Teachers' College, Columbia University, New York.

(Contains articles on weaving.)

TEXTILE INDUSTRIES OF THE UNITED STATES. *Chautauquan, March, 1899.*

TEXTILE INDUSTRY SINCE 1890. *Forum, May, 1899.*

TEXTILES, OLD AND NEW. *The Craftsman, The United Crafts, Eastwood, N. Y., January, 1902.*

(Contains "Notes from the History of Textiles," "A Revival of English Handicrafts," and "Brain and Hand.")

The Elementary School Record, by Dr. John Dewey. Numbers 1 to 9. *The University of Chicago Press, 1900.*

(Contains articles on weaving and a record of industrial work done in the University Elementary School, University of Chicago.)

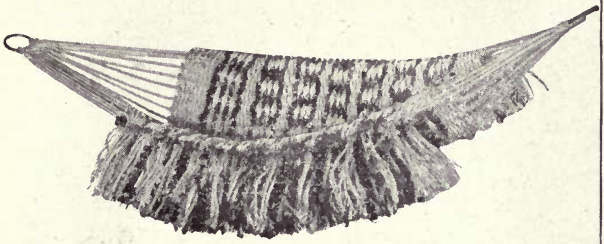
THE LABOR MUSEUM AT HULL HOUSE, by Jessie Luther. *The Commons, Hull House, Chicago, Vol. VII., No. 70, May, 1902.*

(Contains illustrations of old looms, and the methods of spinning and weaving.)

WEAVERS OF THE PHILIPPINES, by G. E. Walsh, *The Catholic World, March, 1902.*

WHAT IS BEING DONE IN TEXTILE EDUCATION. *Chautauquan, August, 1900.*

Many topics interesting to teachers of industrial work are dealt with in the instruction papers of the International Correspondence Schools, Textile department. Address communications to Christopher P. Brooks, New Bedford, Mass.



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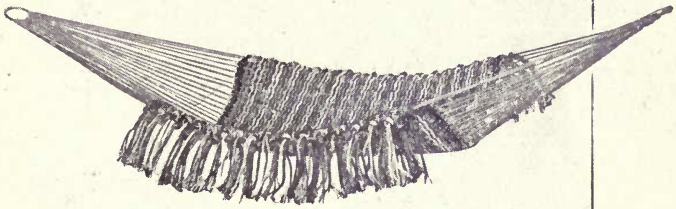

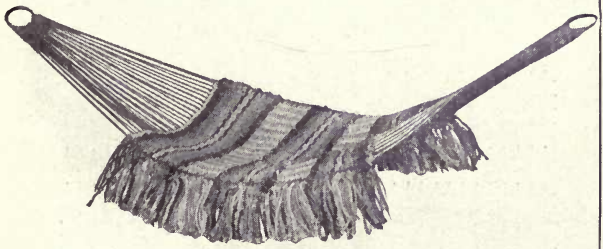

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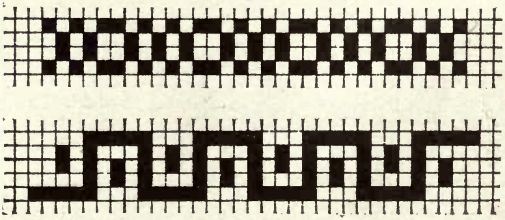

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